Drug and Cosmetic Industry

AUGUST 1954

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Drug and Cosmetic Industry

August 1954 Vol. 75 No. 2

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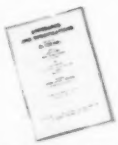

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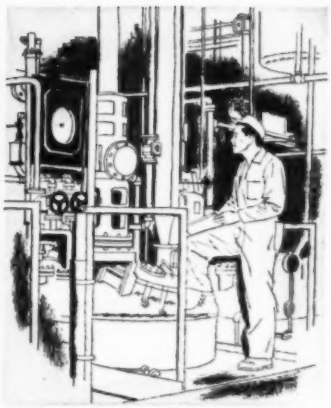

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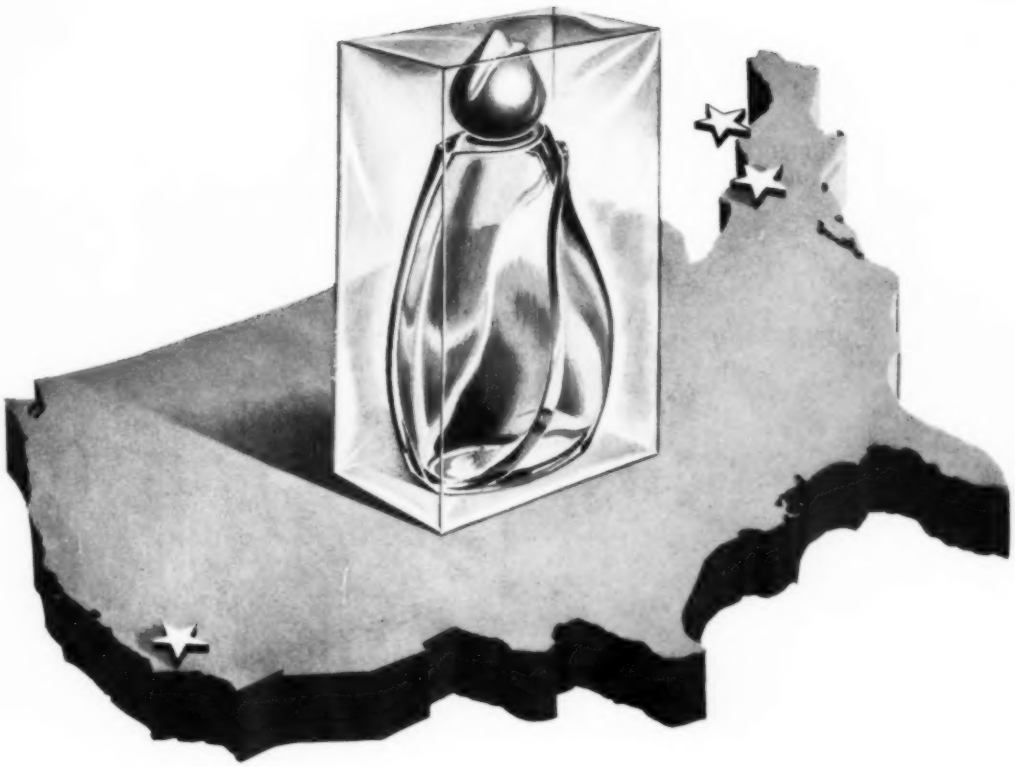

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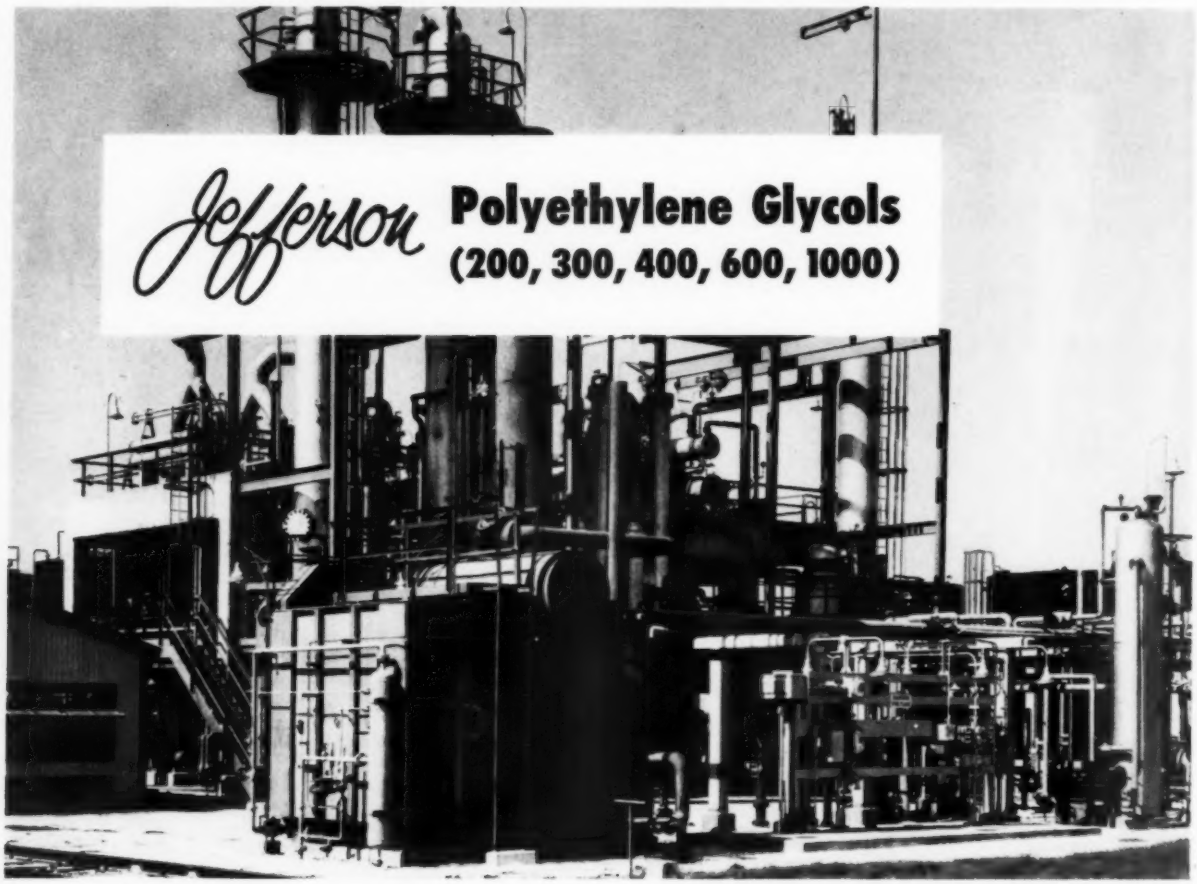

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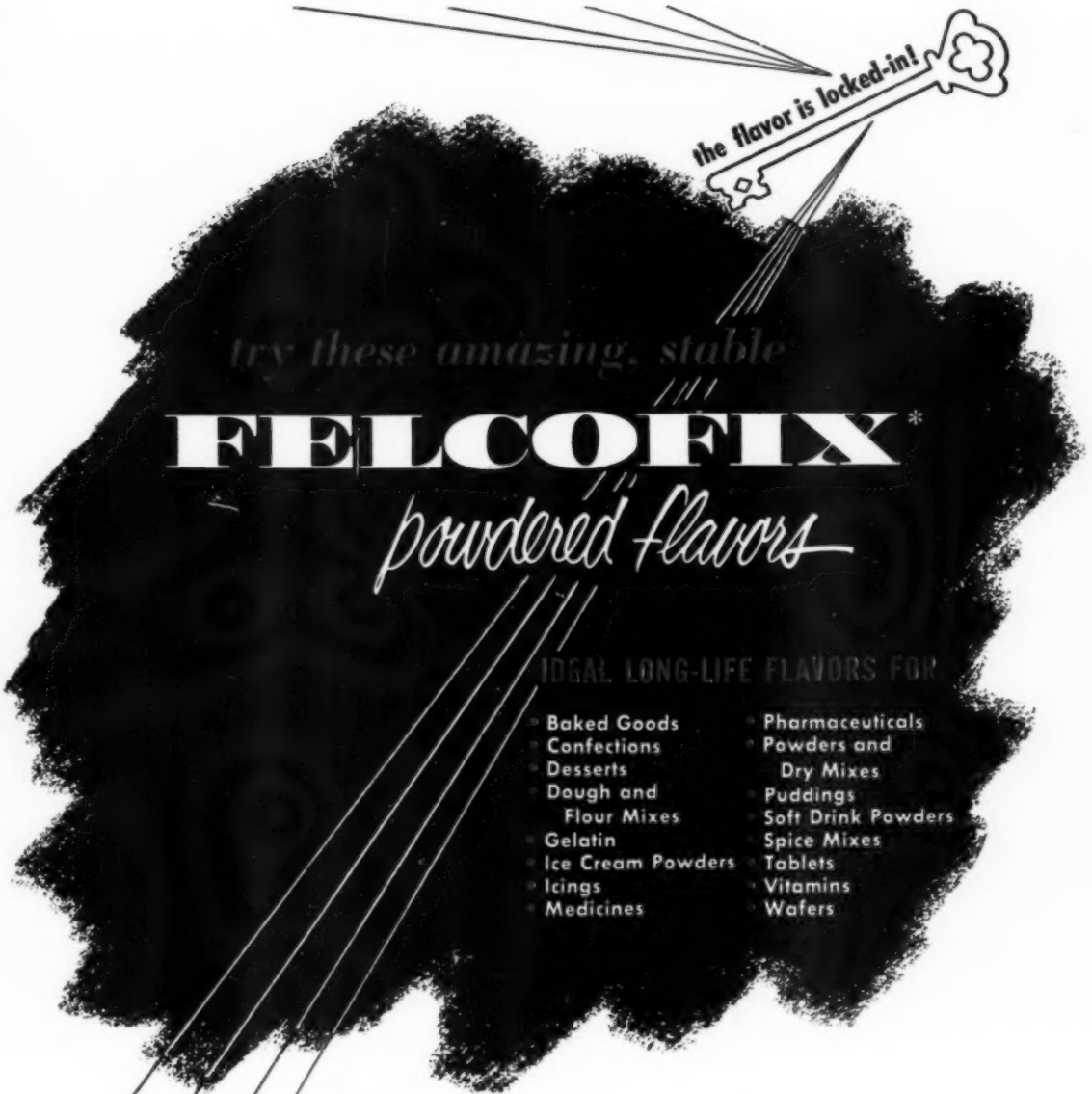
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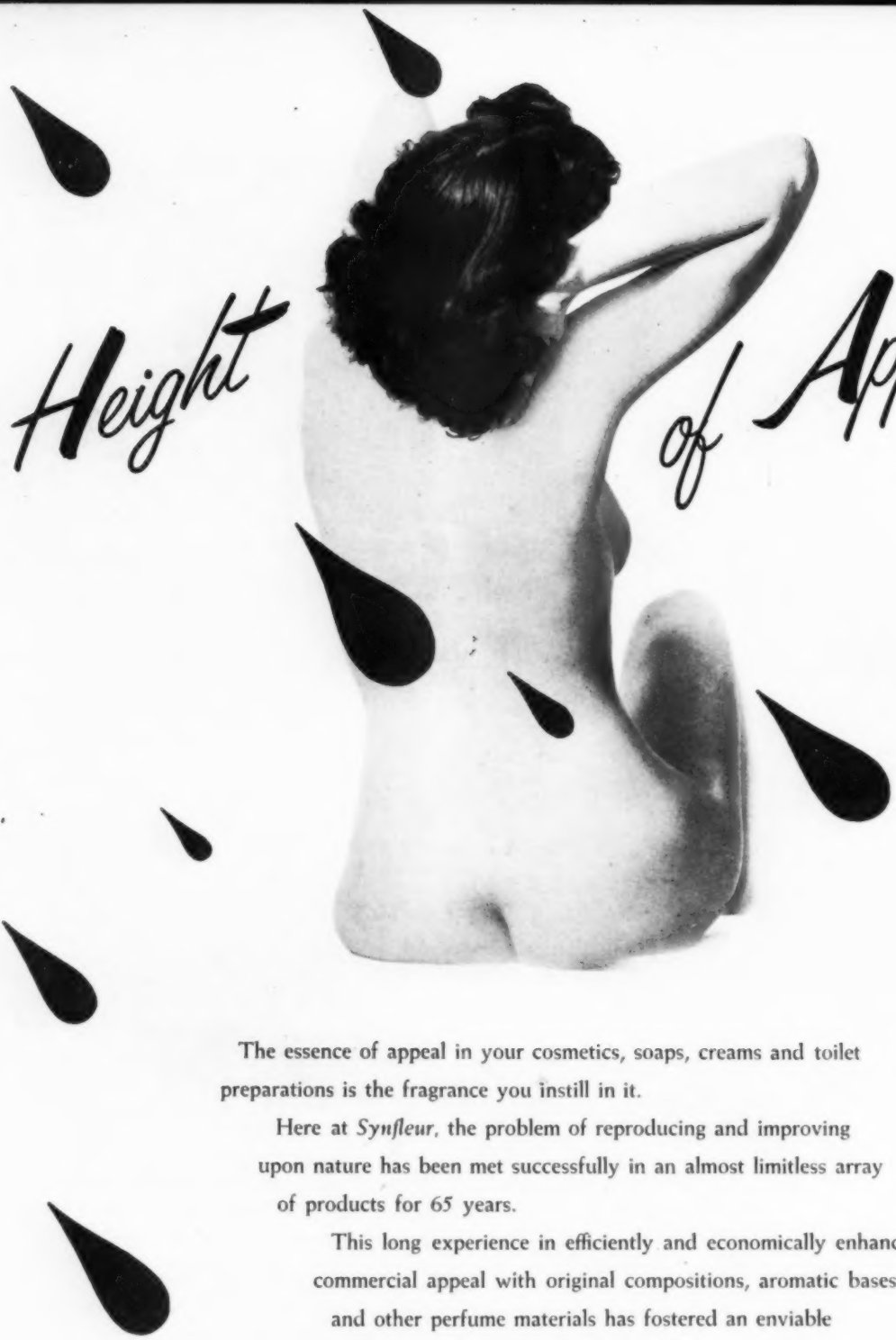

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HERMANN LUDWIG von HELMHOLTZ (1821-1894), noted German physicist, anatomist and physiologist. He excelled in fields of acoustics and optics. In 1851 he invented the now universally used ophthalmoscope. Illustration shows him using the ophthalmoscope during an upright examination.

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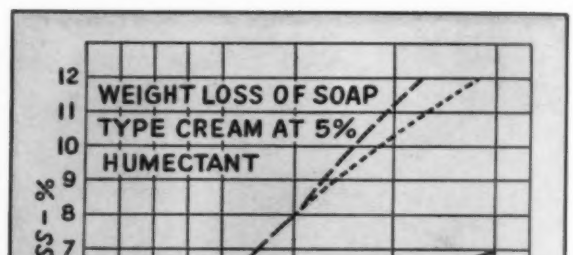
● The most noticeable effect of evaporation is the shrinkage of cream from the sides of the jar, demonstrated by the test samples illustrated. These creams were prepared in the Atlas laboratory with various emulsifiers and humectants. All were exposed to 50% relative humidity for 15 days. The sample at the left uses potassium stearate soap, formed in situ, as the emulsifier, and 5% of a common humectant other than sorbitol. It suffered severe shrinkage. The second cream has a formula similar to the first, but was made with a non-ionic emulsifier. Although it did not shrink laterally enough to cause cracks, the level of cream dropped appreciably from the rim of the jar. The third sample was prepared with non-ionic emulsifiers but also contained sorbitol . . . a humectant that gives better retardation of water loss. The amount of visible shrinkage is negligible.



● To investigate further into the effectiveness of various humectants, a series of tests was conducted in our laboratories to examine the rate at which creams made with various conditioners would lose moisture under standardized storage conditions. A standard soap-type formula was used, the only variation being the humectant.

Results of typical tests at 50% relative humidity are shown in the chart. The humectant level was 5% in all cases, this being a normally used proportion that produces a good cosmetic effect.

It can be seen that sorbitol-conditioned soap-type creams lose moisture more slowly than those containing other conditioners. Sorbitol thus helps these products retain their cosmetic elegance longer, and prevents costly loss of weight during production when batches are left in process overnight or over week ends.

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Add emulsifiers properly

For example, if you're making an O/W emulsion containing fairly high concentration of emulsifier, start by dispersing the emulsifier in the oil phase. Then add water slowly to the mixture until the inversion point (W/O changes to O/W) is reached . . . after which the remaining water is added more rapidly. When small percentages of emulsifiers are used, add oil and emulsifier to the water in a pre-mix, and then homogenize the coarse emulsion.

When making W/O emulsions, it is best to add water to the mixture of oil and emulsifiers, and then to homogenize the emulsion. Homogenization may not be necessary if a small amount of hydrophilic emulsifier is used in addition to the strong W/O emulsifier.

Watch temperatures

Oil and aqueous phases should be at approximately the same temperature at the time of mixture. To allow for cooling, it is best to have the phase to be added about two degrees warmer than the other phase. If waxes are a part of the oil phase, temperature should be at least 10 degrees above the melting point of the wax.

Another tip

Select your emulsifiers from the several non-ionic types available from Atlas. And use the Atlas HLB system to save hours of experimental work in finding the proper emulsifier or blend for your own problem. Write for "A Guide To Cosmetic And Pharmaceutical Formulation With Atlas Products."

Atlas products useful in molded specialties

Hystrene® fatty acids and Sorbo® sorbitol solution offer numerous advantages in the manufacture of solid colognes, stick deodorants and after-shave sticks, molded specialties which are becoming increasingly popular.

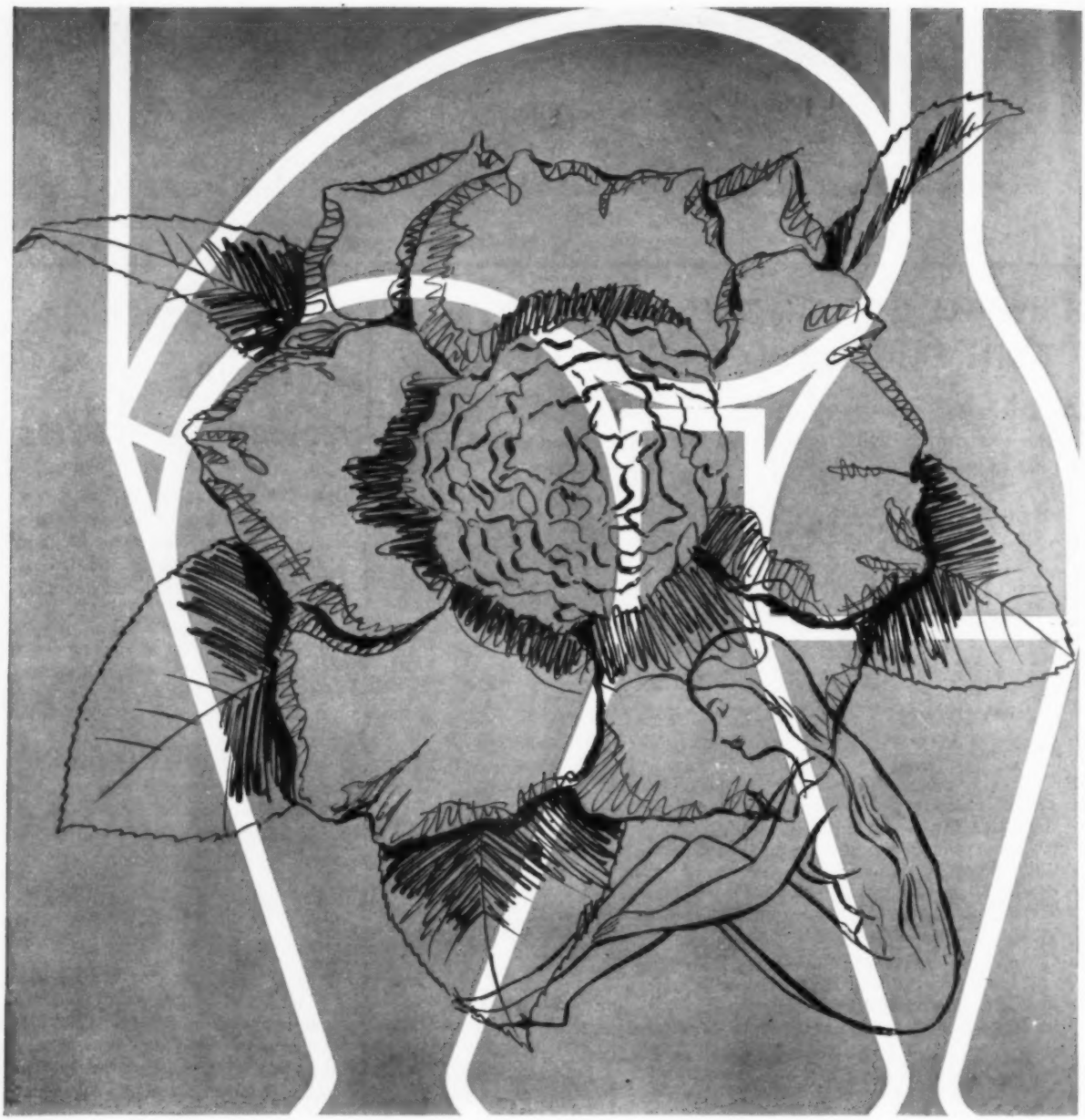
The gelling agent in most such products is soap formed by the reaction of sodium hydroxide and a fatty acid. Hystrene T-70 fatty acid is exceptionally advantageous for this use because it is about 70% stearic acid and only 1% or less oleic acid, and its soap therefore has better gelling properties than a soap derived from triple-pressed acids (3-5% oleic acid and 45% stearic acid).

Sorbo is used as the humectant because it is non-volatile, and thus prevents too rapid drying of the film applied to the skin.

The following formula is a guide to application of these Atlas products in a solid cologne. The alcohol content may be varied slightly to allow for addition of, for example, an active ingredient such as hexachlorophene to make a deodorant stick, or menthol to give a cooling effect in an after-shave stick.

A	Hystrene T-70 fatty acid	5.00%
	Sorbo	2.00%
	Alcohol	87.36%
B	Sodium hydroxide	0.64%
	Water	5.00%
C	Perfume	q.s.

Heat (A) to 65°C., (B) to 70°C. Add (B) to (A) with agitation. Add perfume at 55—60°C. Pour into heated molds. Cool slowly to prevent formation of air pockets.



CITRON ROSE FA-2418 ..... **$6.75**

A highly successful Roure-Dupont creation in which the sweet note of Rose is laced with a fresh, cool lemon odor. Excellent for use in all types of facial and hand creams in which it is non-toxic and will not cause discoloration.

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Muguet (lily-of-the-valley), fresh and delicate, is blended with a velvety Rose in a charming fragrance which lends an elegant touch to creams of all kinds. Long lasting, this specialty will not discolor nor oxidize.

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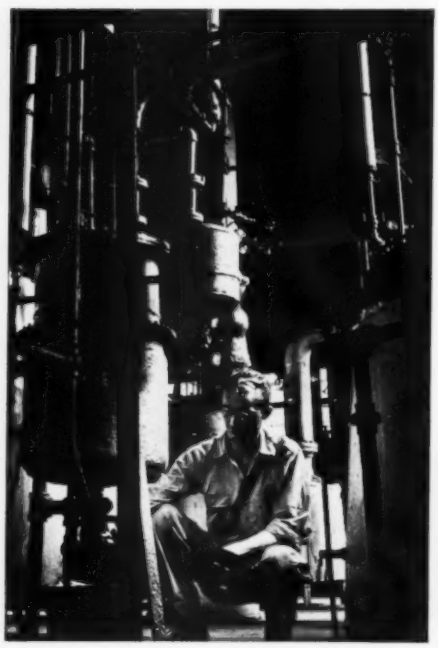
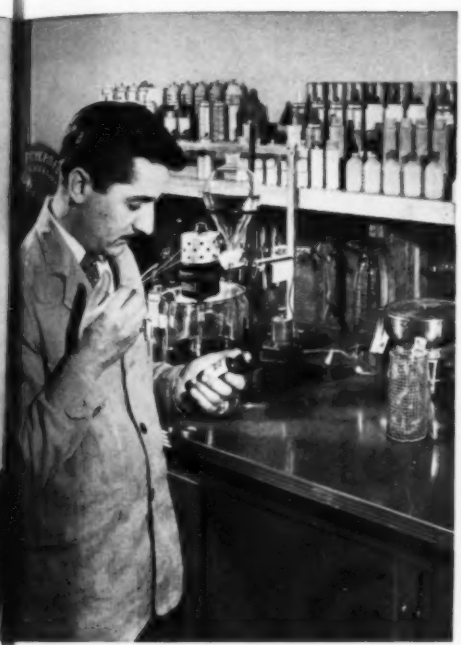
How Givaudan's continuing research helps solve your fragrance problems

A program of continuing research, integrated throughout all Givaudan laboratories, is constantly making available new and better materials to perfume, soap and cosmetic manufacturers.



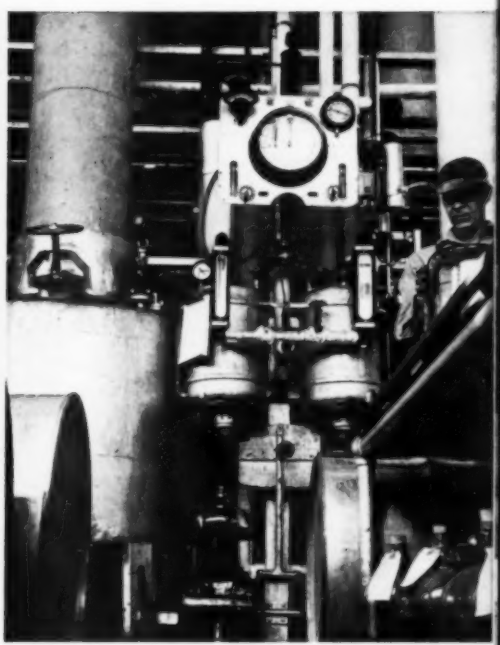
The complete variety of aromatic chemicals manufactured by Givaudan represents long pioneering in the development of these "keystones of progress" in perfumery.

Many successful perfumes owe their outstanding originality and beauty to specialties developed through Givaudan's research and creative ability.



Givaudan's Aerosol Laboratory enables us to offer odors in pressure-propelled products which have been fully tested for compatibility, corrosion, solubility and fixation.

Shelf testing has long been an important part of Givaudan's service. Our staff will cooperate with you in paralleling our tests with yours, thus providing a double check.



As the largest manufacturer of aromatics, Givaudan can meet all needs, large or small, for quality and variety, and also give close attention to special problems.

Continuing research, together with modern production facilities, enables Givaudan to give its customers valuable cooperation in product development.

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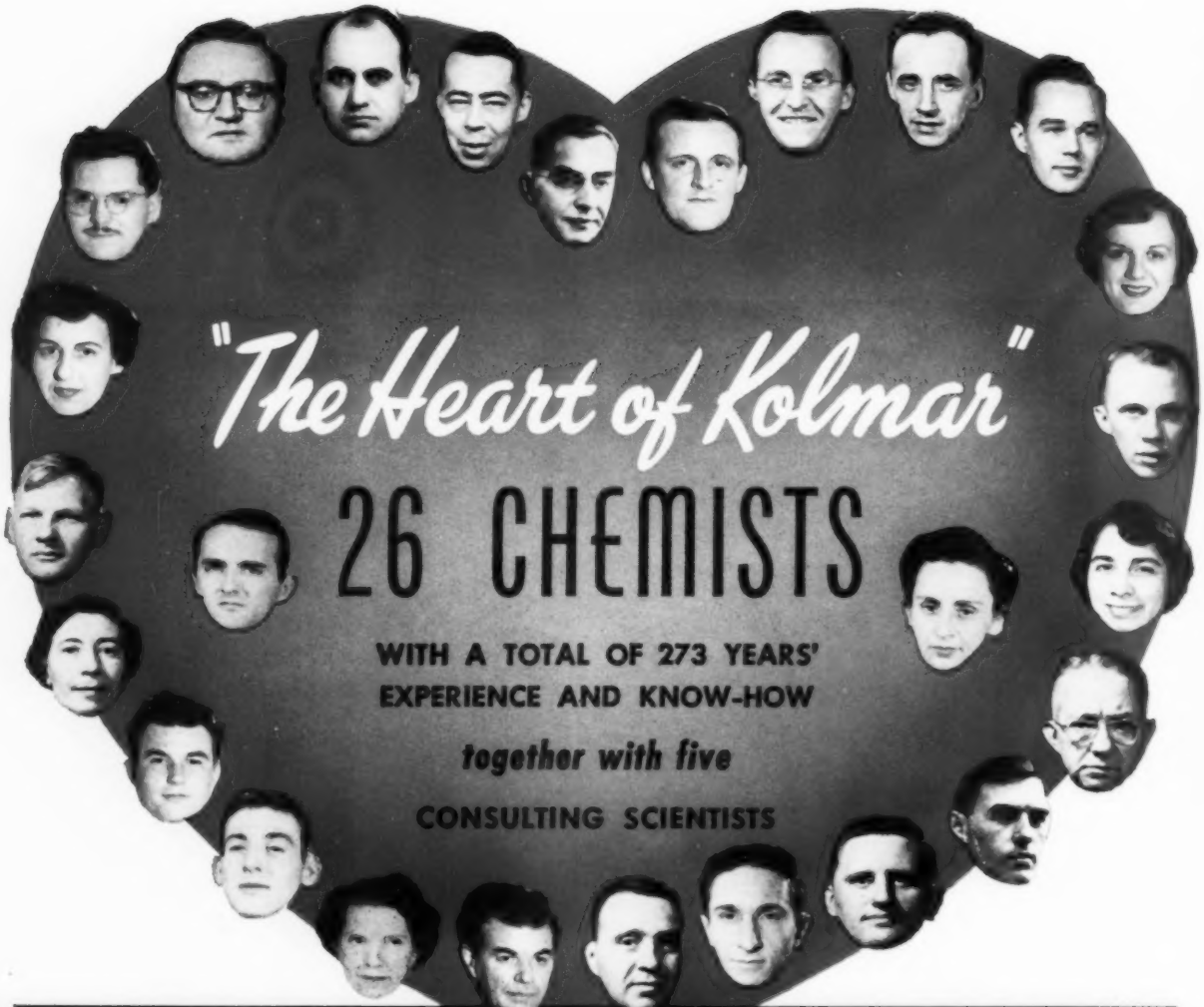
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together with five
CONSULTING SCIENTISTS

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♥ It provides the control of quality from raw material to finished product . . .

♥ It has given Kolmar product superiority and uniformity, combined with favorable price . . .

♥ It has enabled Kolmar to develop many of the best known products in the cosmetic field . . .

♥ It constantly works for the improvement of existing methods and formulae, and the development of new ones.

♥ It has won Kolmar recognition *as America's Leader in Private Label Cosmetics.*

The customer's rights in the formula under which he operates is always respected by Kolmar. Consultation will not obligate you and there's a Kolmar Laboratory or Representative near to give you prompt service at all times.

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Kolmar Products include Lipstick, Dry and Cream Rouge, Loose Face Powder, Cake Make-Up, Compact Powder, Foundation Creams, Liquid Make-Up, Eye Shadow, Mascara, Lotions, Colognes, Perfumes and other cosmetics.

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For example, one or two percent of Myverol Distilled Monoglyceride, Type 18-05, gives you an effective viscosity builder for liquid creams—is far more effective than usual materials.

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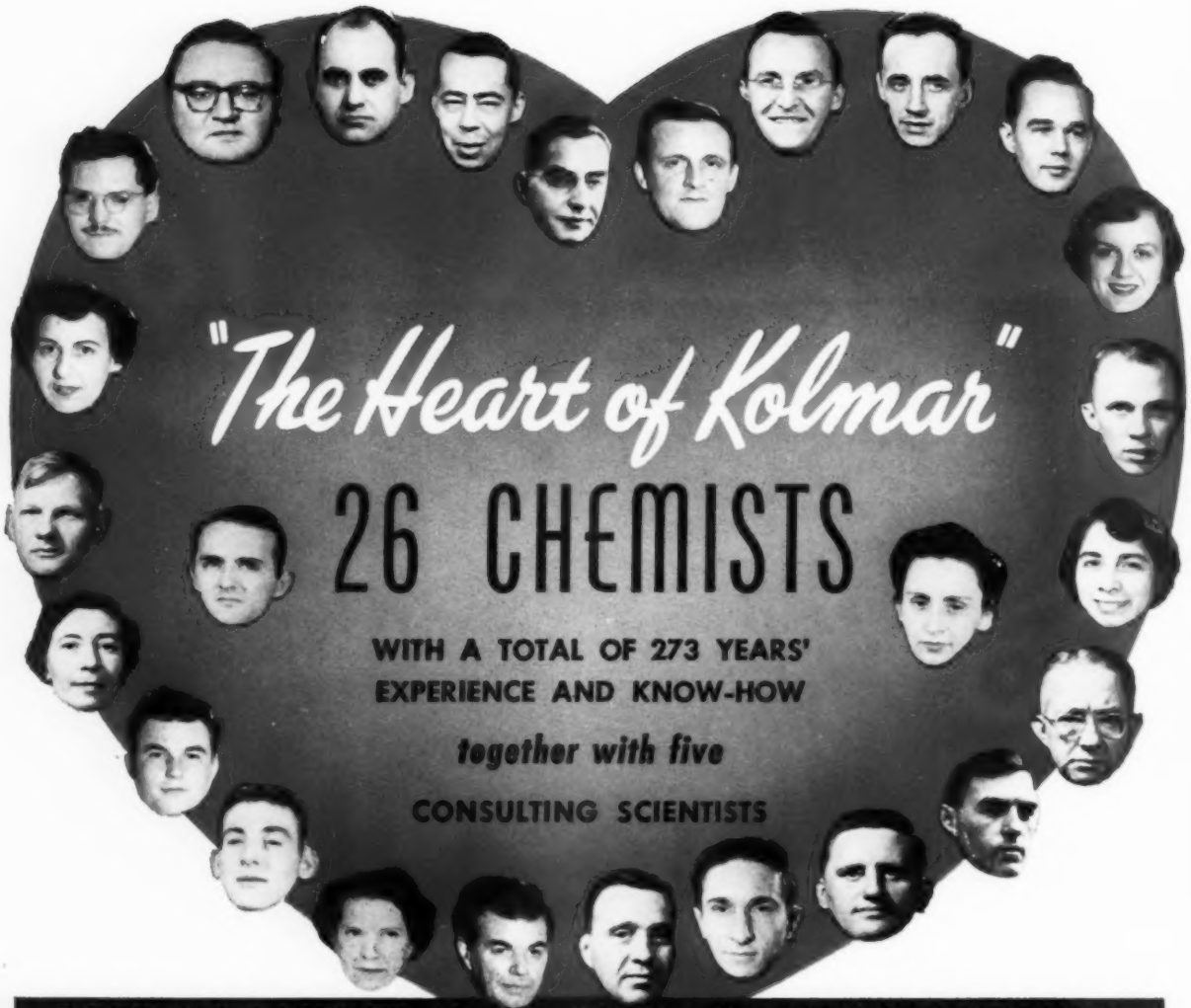
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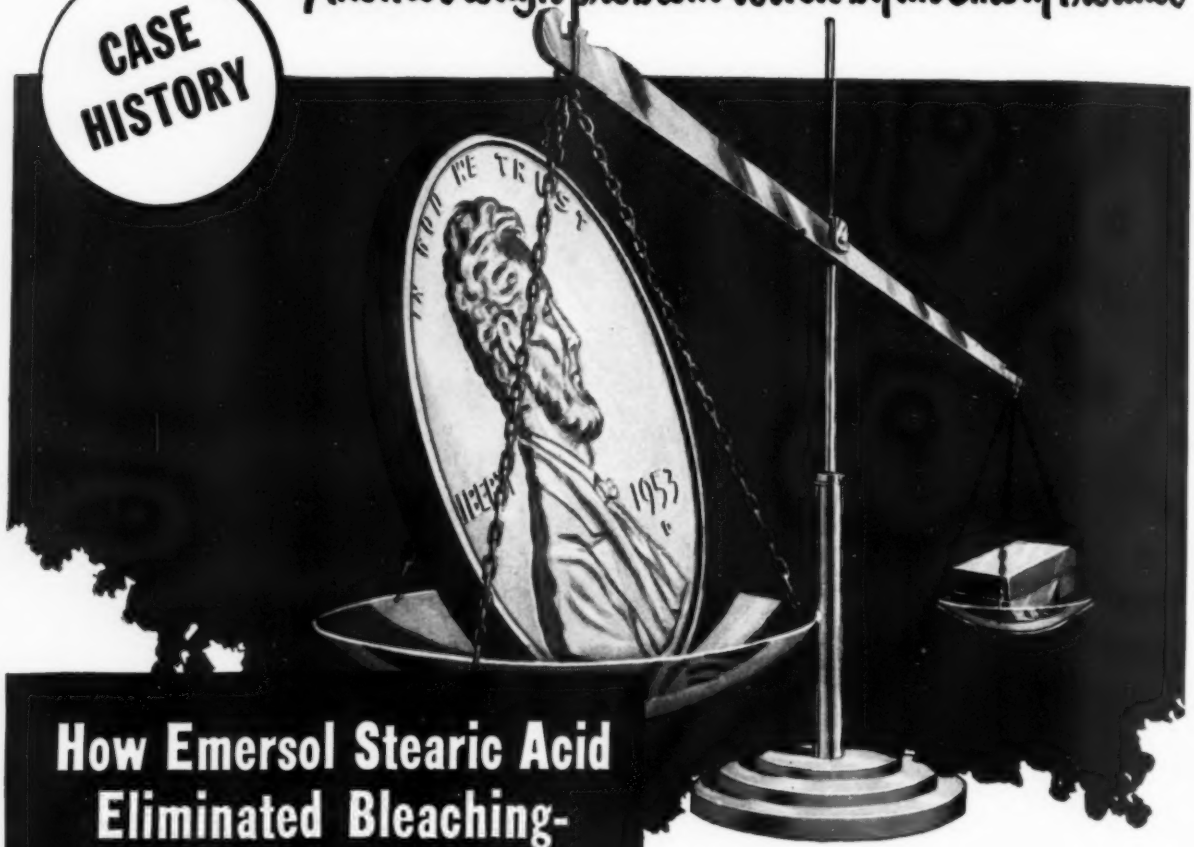
CASE HISTORY

Another tough problem solved by an Emery Product



How Emersol Stearic Acid Eliminated Bleaching-Saved ½¢ a Pound

By using Emersol 132 Lily Stearic Acid in place of an ordinary triple-pressed type, this manufacturer of *esters* was able to attain the desired color of his product *without bleaching* and without spending extra money, because Emersol Stearic Acids cost no more than ordinary grades.

In this actual case, the exceptional *color-stability* of Emersol 132 resisted the darkening that normally occurred during high-temperature esterification. Not only was the cost of bleaching eliminated (labor and materials), but the yield of finished product increased by the amount normally trapped in the discarded filter cake.

The outstanding stability of Emersol Stearic Acids can mean as much to you. Even where color is not of primary importance, their superior resistance to rancidity and to oxidation are extra benefits that make any product *more salable.* Since they cost no more than ordinary grades, it will *pay you* to use Emersol Stearic Acids—available in all grades to suit your specific need. Next time...everytime...buy Emersol Stearic Acids.

IF YOU USE A DOUBLE PRESSED GRADE...

Here's one of many reasons why Emersol 120 Standard Stearic Acid is preferred over competitive double-pressed grades. These colors of *glyceryl monostearates* clearly show the value of the outstanding *color stability* of Emersol 120. The monostearates were esterified for 5 hours at 250° C, under a CO_2 blanket, with no bleaching or refining.

Glyceryl Monostearate made from	*Lovibond Color (5¼" Cell)*
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Competitive Double Pressed "A"	9Y/4R
Competitive Double Pressed "B"	28Y/8.5R

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Skip the headaches! You really can have three new plants working in a week from the time your order is in . . . 3 Strong, Cobb plants . . . one in Cleveland for the East and Middle West; one in California for the Coast and one in Canada. Your own plant's schedules will not be shot and what with regional shipping you'll probably *save money*.

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"Genetron" propellents are ideally suited for formulating a wide range of aerosol products ... household, drug, agricultural, industrial ... many others. Offering optimum vapor pressures and excellent compatibilities, they can give your product many priceless competitive advantages in terms of performance and sales appeal over products marketed in ordinary containers.

Today, "Genetrons" are the first choice of many leading aerosol fillers and marketers ... and for good reason as you will quickly learn when you power your products with "Genetron" propellents.

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Keeping Posted

John W. Dargavel Foundation

Seven leaders of the industry have been named to the Board of Trustees of the John W. Dargavel Foundation, according to Albert C. Fritz, chairman of the fund-raising drive in behalf of the Foundation.

The Board of Trustees consists of Albert C. Fritz of Indianapolis, Dr. Frank Moudry of St. Paul, Minn., and John Goode of Asheville, N. C., all past presidents of the National Association of Retail Druggists; Roy S. Warnack, retail druggist of Los Angeles; George Van Gorder, president of McKesson & Robbins; James Hill, Jr., chairman and president of Sterling Drug; and L. D. Barney, president of Hoffmann-La Roche. The Executive Committee consists of Mr. Fritz, Dr. Moudry and Mr. Van Gorder.

The Advisory Committee has 15 members: Moe G. Brudno, druggist, Boston; Edgar S. Bellis, NARD past president, Bronxville, N. Y.; John J. McKeighan, druggist, Flint, Mich.; Willard B. Simmons, druggist, Texarkana, Tex.; Charles S. Beardsley, chairman, Miles Laboratories; Harry Kimbriel, vice-president, Eli Lilly and Company; Jean Depres, executive vice-president, Coty, Inc.; O. J. Cloughly, president, St. Louis Wholesale Drug Co.; Roy V. Schwab, Brunswig Drug Co., Los Angeles; Mrs. Thelma M. Coburn, executive secretary, Alabama Pharmaceutical Association; Harry M. Moen, executive secretary, Chicago Retail Druggists Association; Richard Hopelain, executive secretary, Northern California Pharmaceutical Association; Dr. Robert L. Swain, chairman of the Board of Trustees, U. S. Pharmacopoeia; and Dr. Ivor Griffith, president, Philadelphia College of Pharmacy and Science.

A total of $39,188.50 was the announced contributions a month ago. This was contributed in advance of a fund-raising drive, by 507 manufacturers, wholesalers and retailers. The plan calls for a capital fund of $250,000 to be accumulated through contributions of $100,000 from retail druggists, and $150,000 from drug wholesalers and manufacturers. Of the announced total, $10,710 was contributed by ten manufacturers, $9,025 by sixteen wholesalers, and $19,453.50 by 481 retailers.

Cosmetic Chemistry Seminar

The Society of Cosmetic Chemists is to hold what is believed to be the first industry-university seminar on cosmetic science in the United States, according to Dr. Donald H. Powers, president of the Society. Members of the research and teaching staffs of New York University Medical College, Rensselaer Polytechnic Institute and Textile Research Institute will cooperate with chemists of the Atlas Powder Company, Hazelton Laboratories, and Rayette, Inc., in discussing Animal and Human Testing of Cosmetics, Emulsions in Theory and Practice, and Hair Structure in Permanent Waving. The meetings, expected to be a continuing function of the Society are the outgrowth of a long-felt need for a basic cosmetic sciences discussion forum.

September 23 and 24 are the dates of the seminar which is to be held at the New York Academy of Sciences. The fee is $15 for members of the Society and $25 for nonmembers. This includes luncheons for two days and cocktail hour and dinner on the first day, Thursday, September 23. Attendance is limited to 125, and reservations are being accepted on the basis of the date received.

W. C. Griffin, of the Atlas Powder Company, will be moderator of the discussion of Emulsions in Theory and Practice. Two papers will be given on this subject: Theory of Emulsions, by G. L. Brown, of Rohm & Haas Company; and Emulsion and Foams, by Sydney Ross, of Rennsselaer Polytechnic Institute.

E. O. Butcher, chairman, Department of Anatomy, New York University Dental School, will be moderator in the discussion of Animal and Human Testing of Cosmetics. Two papers are to be given on this subject: The Evaluation of Chemicals by Application to Animal Skin, by Lloyd Hazelton, Hazelton Laboratories; and Correlation Between Animal and Human Testing of Materials Used in Skin Care, by E. F. Traub, Department of Dermatology, New York Medical College.

W. C. Hamburger, director, Fabric Research Laboratories, will be moderator of the discussion on Hair Structure and Permanent Waving. Two papers are to

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Hand beauty begins with this proven Base. Smooth and stable and containing lanolin, its uniformity is always dependable . . . it's economical, too.

Absorption Base #326 is versatile—fluid enough to double as a body or beauty rub—its fine smooth spreading quality makes it a superior powder base.

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be given on this subject: The Effect of Bilateral Structure on the Chemistry of Keratin Fibers, by J. H. Dusenbury and E. B. Jeffries, Textile Research Institute; and The Effect of Waving Lotions and Neutralizers on the Structure and Properties of Hair.

Plant trips to a choice of five cosmetic plants are planned for the afternoon of the second day. Scientific instruments firms will exhibits their wares during the seminar.

A.P.M.A. Combines Meetings

The American Pharmaceutical Manufacturers' Association will combine its Mid-Year and Eastern Section Spring Meeting in a consolidated meeting to be held December 6-8 at the Waldorf-Astoria Hotel, New York, according to Robert A. Hardt, president of the Association. Mr. Hardt said that the responsibility for providing a streamlined, information-packed program of national interest, to be announced in September, has been given over to Francis Brown (Schering president) and collaborating chairmen of the Association's regular operating committees.

The meetings are being experimentally combined in response to a demand from many executives who have found it impossible to attend the two separate meetings. Practical operating problems, which have been covered in the Eastern Section program, will be included in the combined Mid-Year program and many junior pharmaceutical executives are expected to attend the sessions. An added benefit of combining the two meetings is a reduction in the expense to the Association of holding separate meetings.

Fair Trade Court Record

"Major victories for the fair trade laws have been won in the past six months by manufacturers who respect the laws and their own fair trade contracts," said John W. Dargavel, executive secretary of the National Association of Retail Druggists, and chairman of the Bureau of Education on Fair Trade, in a semi-annual review of fair trade developments.

"More wins than losses have been scored for fair trade laws since the first of the year," he said. Three high courts—New Jersey, and Delaware—have upheld the constitutionality of these laws, he pointed out. The U. S. District Court at New Orleans has also made the first definitive ruling that fair trade applied to fair-traded prescription items, he noted. In addition, many lower courts over the nation have upheld fair trade by granting injunctions against violators.

On the losing side, Dr. Dargavel pointed to the invalidation by the Florida State Supreme Court of the non-signer clause in that state's fair trade law, although the court at the same time upheld the validity of signed fair trade contracts.

"Victories for fair trade can only be sustained by manufacturers who respect the obligations they assume in fair trade contracts with their distributors and who are determined to make these laws of fair competition work," said Dr. Dargavel. "In hundreds of lower courts over the country, the manufacturers of well-known national brands are successfully winning judicial relief from the unfair competition that destroys the value of trade marks, bankrupts the established retailer and entraps the consumer with phony bargains. Every manufacturer who signs a fair trade contract thereby pledges himself to the effective operation of that contract. If he does not intend to enforce fair trade, he should not fair-trade his product."

Book on Health Care

The Health Information Foundation has published the third annual comprehensive Inventory of Social and Economic Research in Health. Issued as a fundamental contribution to the expanding field of health care, the Inventory serves a dual purpose in helping to minimize duplication in research and reveal areas needing further research. The 1954 edition summarizes 279 current and recently-completed projects. Descriptive reports of the projects are supplemented by complete indexes of subjects, research organizations, sponsors of projects and geographic areas studied. A limited number of copies is available to researchers working in the health field and to libraries.

Fair Trade on Prescriptions

While there has been much comment regarding the opinion regarding the application of fair trade to drugs sold on prescriptions, given by Judge J. Skelly Wright of the U. S. District Court in New Orleans, this question has not been truly adjudicated as yet. As a matter of fact, the question was not settled in the case cited, but was merely an expression of the personal opinion of Judge Wright.

In the case cited, action was brought by Hoffmann-La Roche against Schwegmann Brothers for violation of an injunction previously obtained by Hoffmann-La Roche against Schwegmann. Because the charge of violation of the injunction was brought on products sold on prescription, Schwegmann Brothers pleaded that sales on prescription were not included in the injunction and were not covered by the fair trade laws. The judge agreed with Schwegmann to the extent that he ruled that Schwegmann was not guilty of violation of the injunction in that the particular question of fair trade on prescriptions had never been raised and therefore had not been ruled upon. At the same time he expressed the opinion that fair trade did apply to drugs sold on prescriptions.

Because of the fact that Schwegmann was ruled "not guilty," there can be no appeal in this case. Therefore, the question of whether or not fair trade applies to drugs sold only on prescription will not be finally settled in this action.

Before the end of this subject is heard, there must be clear cut cases on this particular point brought in all the states having fair trade laws, and these actions must be appealed to the highest court of each state.

The real question involved concerns drugs which cannot be sold other than on prescription. There is no other market for these products by which fair trade can be applied to them. Furthermore these products do not bear directions for use. The doctor in writing a pre-

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scription for any of these drugs, bases his prescription on his examination of a particular individual having a particular condition. He writes directions for use. Therefore, each prescription written for any of these drugs might be considered a special thing, an entity. Therefore, it cannot be considered to be in competition with any other product, and therefore, it might be considered as subject to the fair trade laws.

Also this same line of reasoning might be applied to drugs which may be sold over-the-counter, when they are dispensed on prescription. In many instances when these products are prescribed, the directions are either changed from those which appear on the package or at least they are specific. Therefore, the doctor has applied his knowledge, as in the case of products restricted to sale on prescription, to make each of these products individual things when prescribed.

Pharmacists and Legislation

"In general, the legislative activities of pharmaceutical associations have been devoted either to the prevention of the enactment of legislation inimical to the public health and welfare, and incidentally to the professions, or to legislation which will foster certain regulatory procedures designed to protect the public against indiscriminate sales of dangerous or poisonous or habit-forming drugs. They have often been found on the side of advocating restrictive legislation which reduces income, and they also have been found on the side of legislation designed to throw additional regulatory protection around the dispensing of drugs which, so far as the pharmacist is concerned, creates another hardship and another expense because of additional record keeping required." Thus spoke F. Royce Franzoni, president of the American Pharmaceutical Association in addressing the mid-year meeting of the New Hampshire Pharmaceutical Association recently. Mr. Franzoni continued:

"You are familiar with the fact that in the past ten years Supreme Courts in several states have ruled against the protection which has been afforded the public in the matter of restricting sales of drugs and medicines to places which are supervised by pharmacists. . . .

"In a recent number of the Yale Law Journal . . . a complete review was made of state regulation of drugs, with special reference as to who may sell patent and proprietary medicines. Again this review is based entirely on court decisions dating back to the very earliest passage of state pharmacy laws and the very earliest decisions of the court with respect to the distribution of drugs and medicines.

"The concluding paragraphs in this review are very illuminating because they give us the other side of the picture very clearly. Here is what the carefully annotated statement says:

" 'Apart from constitutional issues, allowing non-pharmacist sale of all prepackaged, non-prescription drugs is a sound policy. These preparations still would be subject to laws which prohibit adulteration and misbranding, prevent false advertising of curative powers, and require that the safety of new drugs be proved before they enter commerce. Moreover, an increase in the number of retail outlets will serve consumers' convenience, and it may expand manufacturers' markets. The only one possibly hurt by adoption of the common usage definition is the drugstore owner, who may lose much of the trade which traditionally has been his. But he should not be heard to complain. While holding his drug patronage captive, he has been free to expand his merchandising in all directions. Today almost half his sales are unrelated to drugs. And he will retain his prescription filling business. Certainly, his plight does not seem tragic enough to justify sheltering him from competition through use of the technical definition—a legislated monopoly masquerading as a health regulation.'

"There you have it. A summary of what the courts have said, not in so many words, but what it amounts to when the legal language is stripped from the meat of the decision. We are pictured as grasping individuals who invoke the law in order to create monopolies for ourselves in the sale of drugs and medicines. The health angle of the situation is ignored entirely. This is what we have to face today, and it is not too soon to determine just what is to be done about the situation.

"Where pharmacy owners as a class have failed dismally in this matter is to permit general sales clerks to distribute drugs. If we want to really safeguard the public health—and there is no question but what the safeguard is needed—we must ourselves cease to look upon packaged drugs as mere merchandise. We must look at it as potentially dangerous material to put in the hands of the layman. Every one of us should have in his library a copy of the book entitled, 'Side Effects of Drugs.' This is a volume which deals with the unfavorable action of all classes of drugs and shows rather conclusively that none is absolutely safe for every individual.

"The modern practice of medicine makes use of a large number of valuable synthetic drugs having powerful actions which can be curtailed or reversed by other powerful agents if this becomes necessary. However, an expert knowledge of the action of these drugs is needed in order to be able to determine just what to do when emergencies occur. These are things which the public does not know and it is up to us to let them know. It is along these lines rather than along the lines of merchandising campaigns and advertising, calculated merely to increase sales, that we ought to be working when we develop professional relations or public relations programs."

Dow Chemical in Mexico

The Dow Chemical Company is further expanding its operation abroad by the purchase of a half interest in Pyrina, S. A., of Mexico, which is engaged in the manufacture of basic pharmaceutical chemicals for the Mexican market. Simultaneously, Dow Inter-American Limited, a Dow export subsidiary, announces establishment of a new sales office in Mexico City which will serve not only Mexico, but also Central American countries as well as Colombia, Venezuela, British Guiana, Surinam, French Guiana, and the West Indies. Pyrina, incorporated in 1949, will expand its facilities in metropolitan Mexico City for the manufacture of aspirin, salicylic acid and other pharmaceutical chemi-

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cals. Dow enters the venture as a major producer of basic pharmaceutical chemicals.

Dr. Enuf Stipulation

Mark Williams Chemical Company, Chicago has agreed by stipulation with the Federal Trade Commission to modify therapeutic claims for a carbonated soft drink containing vitamins and minerals and sold under the name of Dr. Enuf.

The company will stop representing that the product is of value in the prevention or treatment of colds or rheumatism; it will stop making unqualified claims that the product is of value in the prevention or treatment of aches or pains, headaches, stomach distress, constipation, run-down conditions or any other symptoms or conditions. Claims of this nature must be "clearly limited to cases resulting from a deficiency of vitamin B_1, vitamin B_2, or niacin."

Medicinal Claims Stopped

D'Franssia Laboratories, and partners Jose Liberman and Luis Jorge Betz, Los Angeles, have stipulated with the Federal Trade Commission to discontinue certain advertising claims for EstomaYerbin, Bromogenol, Kinamole, Trisal, and Kortamina. They will stop representing that EstomaYerbin is effective in relieving backaches; that it is effective in treatment of irregularities of intestinal functions; or that it is effective in relieving headaches except those due to constipation. They will also stop claiming that Kinamole nourishes the hair; that Kortamina derives its analgesic effect from only one ingredient; that Trisal has any effect on the symptoms, manifestations or discomforts of rheumatism or arthritis beyond affording temporary relief of minor aches, pains, or fever; or that they own or operate a laboratory. Advertisements for Bromogenol will clearly and conspicuously reveal that users should "follow the label" and "avoid excessive use."

Hadacol Case Dismissed

The Federal Trade Commission has dismissed without prejudice its complaint charging the LeBlanc Corporation, Lafayette, La., and its president, Dudley J. LeBlanc, with false and misleading advertising of Hadacol. Dismissal was ordered on motion of counsel supporting the complaint. He pointed out that the corporation went into bankruptcy shortly after the complaint was issued in September 1951 and its affairs are still being administered by a bankruptcy trustee. The dismissal is without prejudice to the right of the Commission to take such further action as future facts may warrant.

Proprietary Assn. and N. J. Decision

In a statement concerning the rejection by the Supreme Court of New Jersey of the trial court's definition of the terms, "patent and proprietary medicines," and "non-poisonous," the Proprietary Association points out that the Supreme Court said that the important underlying problems are legislative in nature, and that new enactments which embody definitions are urgently needed.

"Until the legislature acts," says the statement, "it will be necessary for the courts to determine whether or not individual items fall within the existing statutory exemption. Accordingly, the defense of any action against the sale of any product will be the responsibility of the company or individual involved."

The Industry and the F.D.A.

It must seem strange to many in the Federal Administration to see this industry put a strong fight to have a continuance in the office of Commissioner of Foods and Drugs of a man who has served in the Food and Drug Administration over a long stretch of years. But that is exactly what this industry has done. This industry wants no part of a political appointee to head up the FDA under which this industry must live. This industry has, over the years, found that in working with a Commissioner who has lived with his work most of his lifetime, even though he be a dedicated individual—which they nearly all are—they are working with someone who will not be influenced by anything but the facts in the case.

This industry, and many individual companies in this industry, have had many heated differences with the Food and Drug Administration, and certainly all the rulings of the FDA have not been to their liking. However, when dealing with a Commissioner who has come up through the ranks of the FDA, the industry knows it is dealing with someone who is basing his decisions upon experience, and who is making his decisions for no other reason than the proper protection of the public under the law.

This industry has gained much by cooperating with the FDA. Not only has this cooperation helped enhance the respect in which the public now holds the industry, but it has also made scandals in the industry a thing of the past.

The industry does not surrender its right to fight the decisions of the FDA tooth and nail either in the courts or in the Congress. But it has found that the results of dealing with the FDA as it has been constituted since its inception have benefited the industry immeasurably. They see no valid reason for a change.

Internal Mosquito Repellent

An internal way of repelling mosquitoes is announced by Kentrol Corporation, Philadelphia, in the marketing of Bite Ban—tiny tablets to be taken internally. These tablets are said to be easy-to-take and harmless even for little children. "Taken as directed," says the seller, "these tablets set up a natural biochemical 'bodyguard' that is displeasing to mosquitoes. Bite-Ban is said to be "a harmless natural plant substance specially processed from Stavesacre, H.P.U.S. The tablets are said to have proven highly successful against the common varieties of Culex-House, Salt Marsh, and Garden-Type mosquitoes. The tablets are priced at 98 cents for a bottle of 80, and one bottle is said to give a person immunity for 20 days.

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Standard of dependability in both quality and supply, Dow propylene glycol, U.S.P., aids product improvement for cosmetic formulators as well as pharmaceutical manufacturers—with resulting economy in many cases. For an evaluation sample and information on the properties of propylene glycol, U.S.P., send to THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. OC 830G-2

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DOW

Informative Financial Reports

The annual report to stockholders of Chas. Pfizer & Co. has been judged the most effective produced this year by a group of 11 major pharmaceutical companies in a study made for the National Federation of Financial Analysts Societies. The report evaluated reports under 16 headings such as "Discussion of demand for principal products," "Comment on personnel relations," "Capital and research expenditures," and "Description of new products." Out of a total possible score of 100, the judges gave Pfizer's report 72 points, the second place winner being Abbott Laboratories with 69.

Award for Schenley Advertisement

A two-color advertisement prepared by Schenley Laboratories for use in medical journals was awarded a certificate of merit in the 33rd annual national exhibit of advertising and editorial art sponsored by the Art Directors Club of New York. The full-page advertisement for Ediol oral fat emulsion is described as a dramatic combination of photography, layout and tasteful use of color. It was prepared by L. W. Frolich & Co., under the direction of Bud Mittleman, Schenley Laboratories advertising and sales promotion manager.

Pediatrician's Product Handbook

The Accident Prevention Committee of the American Academy of Pediatrics is sponsoring the preparation of a medical dictionary of trade-marked products which will be found in the home and on the farm. Products to be included are pesticides, disinfectants, cleansers, waxes, polishes, solvents, chemicals, and proprietary medicines. Because children frequently get hold of various types of preparations which they might eat or drink, with harmful results, copies of the book are to be furnished to pediatricians in emergency departments of hospitals as a source of information concerning the ingredients of such preparations.

Bureau of Therapeutic Research

The Bureau of Therapeutic Research has been established "primarily to serve the pharmaceutical and cosmetic industry." Lawrence W. Smith, M.D., is Medical Director of the organization, and August J. Pacini, M.D., Ph.D., is Technical Director. A Consulting Panel consists of Frank A. Foley, D.M.D., dentistry; Claude F. Hiskey, PhD., chemistry; A. E. Livingston, Ph.D., pharmacology; Albert B. Pacini, Sc.D., pharmaceuticals and cosmetics; and Bernard Ross, M.D., medicine.

Located at 350 East 35th Street, New York, the Bureau claims to have facilities to conduct clinical screening tests and to establish the effectiveness or otherwise of drugs which, having evidenced certain pharmacologic reactions in lower animals need to be similarly evaluated with respect to human effectiveness in the clinic. The Bureau also claims to have experienced personnel in the matter of market analysis survey; to have many members who are thoroughly conversant with the requirements of the Food and Drug Administration, and equally conversant with the requirements of the Federal Trade Commission. The ability to develop new products is said to be characteristic of other members of the group, and preparation of medical documentation properly presented for medical journal publication is said to be another feature of the services rendered.

Cosmetic Career Women

Cosmetic Career Women, a newly formed organization to advance the interests of women in the toilet goods industry, will hold the first of a series of luncheon meetings September 28 at the Waldorf-Astoria Hotel, New York, with S. L. Mayham, executive vice-president of the Toilet Goods Association as guest speaker. Plans for future meetings include speakers on new products, merchandising, packaging, advertising and promotion, and other subjects of interest and importance in the industry.

The management of the organization is in the hands of an executive committee composed of Kathryn R. Colton, Morningstar-Nicol; Kathryn M. Fitzpatrick, the Toilet Goods Association; P. M. Burrow, Oxzyn Company; Clarice Mills Garland, Colgate-Palmolive Company; and Annabelle R. Farrell, Emery Industries, Inc.

Zonite Denied Modification

Zonite Products Corporation was denied modification of a 1944 Federal Trade Commission order prohibiting "misrepresentation" of Zonite Liquid and Zonitors. The company stated that other sellers of feminine hygiene preparations have been making advertising claims similar to those covered by the order without the qualifying language required of Zonite, and that the failure of the Commission to bring proceedings against these products had put Zonite at a serious competitive disadvantage.

The company requested that there be stricken from the order paragraph 1(a) which prohibits unqualified representations that the products "will destroy all germs or bacteria in the genital tract, or that they constitute a treatment for infection of the genito-urinary tract." The order requires that advertisements containing such claims "clearly and conspicuously" disclose in immediate connection with the claims "that it is not always possible for said preparations to contact all germs and bacteria in the genito-urinary tract."

In rejecting these contentions as a basis for modifying the order, the Commission said that in accordance with its statutory duties, "it is the intention and purpose of the Commission . . . ultimately to reach all who violate the laws administered by the Commission." The opinion states that the fact that additional proceedings have not been instituted against other sellers of feminine hygiene products should not be construed as indicating that the Commission views false or misleading advertisements as other than unlawful, "or that it has determined as a matter of administrative policy that advertisements which are false by reason of a failure to reveal facts material in the light of other representations made therein are not appropriate subjects for corrective action in the public interest . . ."

Beauty Fashion

Provides a straight line to the most profitable points of sale.

1 *Reaches the retailers who know how to sell perfumes and cosmetics and who do sell well over 80% of these products, except low priced, mass distributed toiletries.*

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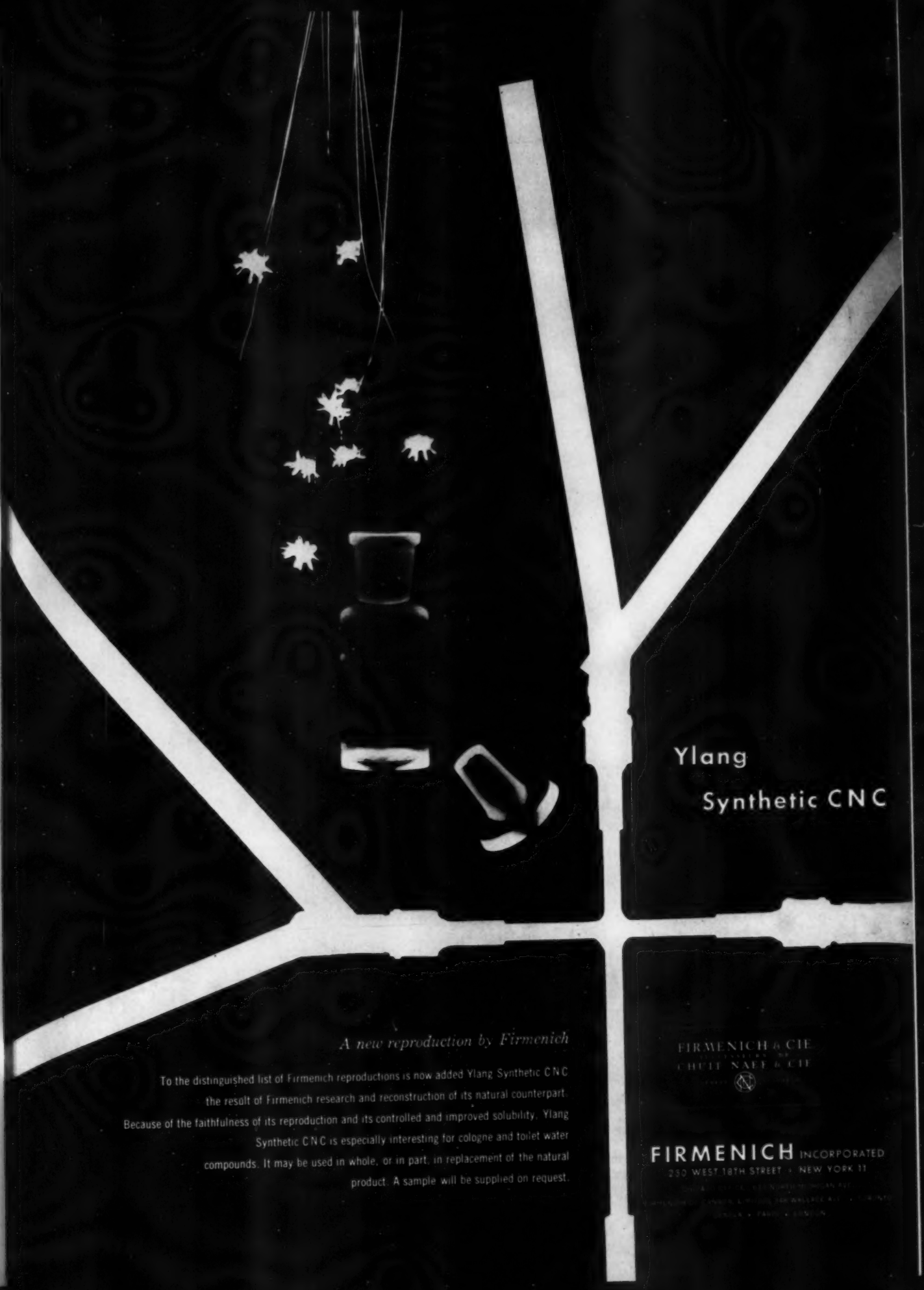

A new reproduction by Firmenich

To the distinguished list of Firmenich reproductions is now added Ylang Synthetic CNC the result of Firmenich research and reconstruction of its natural counterpart. Because of the faithfulness of its reproduction and its controlled and improved solubility, Ylang Synthetic CNC is especially interesting for cologne and toilet water compounds. It may be used in whole, or in part, in replacement of the natural product. A sample will be supplied on request.

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when using fine chemicals... to be sure (√) *check the source*

what makes an IN-STORE display click?

by S. Paul Boochever

VICE PRESIDENT IN CHARGE OF DISPLAY DIVISION
GIBRALTAR CORRUGATED PAPER CO., NORTH BERGEN, N. J.

About 50 per cent of all drug store purchases, according to an estimate made recently by one of the country's leading marketing consultants, are "impulse purchases": last-minute decisions made by the shopper. These purchases, presumably, are conditioned by brand-preference built through radio, TV, newspaper and magazine advertising; but brand loyalty, the survey also showed, is notably weak in the drug and cosmetic field. At the point of purchase, the shopper is quite likely to experiment with an interesting-looking new product—throwing over his old favorite—simply because the new product is easy to reach or attractively displayed. Getting the product off the shelf, out where it is in easy reach of the shopper—set up in its own exciting setting—is the job of the merchandising-weapon type of in-store display.

In-store displays allow the retailer to "stage" merchandise to best advantage, away from uninviting rows of soldiers that are the shelf-stored products. Floor-stands and counter-merchandisers, two of the most compelling types of point-of-purchase displays, encourage feature treatment of the product by retail operators.

Just how effective an in-store display is, however, varies in direct proportion with such factors as how well it has been integrated with the manufacturer's overall marketing program; how much professionalism has been used in its design and production; how appropriate its art theme is to the manufacturer's product; how well it has been related to tie-in products; and, perhaps most important, how enthusiastically the manufacturer's distributors work to see that it *is* used by the retailer. As a leading point-of-purchase display supplier, we have found that display effectiveness depends very largely on the following:

1. *Thorough Advance Planning.* The point-of-sale display is the "clincher" in a manufacturer's marketing program. Other advertising and merchandising techniques shape the consumer's attitude, interest him in the product, urge him into the store. The in-store display reminds him of sales stores these other media told, give him the opportunity to touch, feel, smell the product—actually look it over before he reaches for his wallet.

For this reason, the planning of in-store displays must be done at the very start of the marketing conferences, if the display is to be used with top effectiveness.

Early planning allows the manufacturer to relate copy themes, colors, typography with those used in other media. It gives him time to distribute the display properly; work out its best use with distributors and retailers; see that it is used at the most effective time in the marketing schedule.

2. *Specific-Purpose Design.* The most successful users of point-of-purchase material have found that displays created with a specific selling job in mind are most effective. Those tied-in with a current product "push," those showing only one product in the line are the displays which create most successful consumer reaction. Don't ask one display to do too many jobs; its sales-value will be diluted.

3. *Strong Product Identification.* More than any other advertising or merchandising medium, the point-of-sale display adapts itself to strong product identification. Beverage manufacturers are able to use displays made

(Continued on page 261)

"Good" and "Bad"

In 1951, the U. S. Bureau of Labor Statistics conducted an intensive survey of the total consumer expenditures throughout the United States. The data drawn from this survey showed unusual, sharp differences in cosmetic spending among the cities. For example, Albuquerque, New Mexico, reported their average family expenditures on cosmetics to be $17.32 per family; Boston reported $9.99 per family; St. Louis $10.95; Salt Lake City $17.51; Scranton $6.42. Why these differences? Is there any rational explanation?

To learn if such an explanation could be found, Sales Research Service conducted an intensive analysis of approximately twenty marketing characteristics in fifty U. S. markets, and the reported cosmetic expenditures in each of these areas. Some of the marketing characteristics considered pertinent to the investigation were:

1. Income
2. Non-White Population
3. Women in the Labor Force
4. Number of Female White Collar Workers
5. Number of Married Women
6. Size of Family
7. Education
8. Size of City
9. Sanitary Facilities (hot water, private bathrooms, etc.)
10. Climate

A study of the marketing factors made several points clear:

A. There *is* a rational explanation for the differences in cosmetic expenditures from city to city. This explanation is based on a combination of many of the marketing factors, operating simultaneously and, frequently, in different directions.

B. These factors *can be separated and measured* for each city.

C. By our ability to measure the effect of *each* factor, we are able to construct reliable estimates of cosmetic sales in *each market* in the United States.

D. General indices now resorted to by many cosmetic companies show gross errors of *more than* 40 *per cent* for the top cosmetic markets in the country.

Analysis

In this article, the term "cosmetics" includes lipstick, rouge, face creams, make-up bases, face and body powders, perfumes, toilet water, hand creams and lotions, nail polish, deodorants, and hair preparations (excluding home permanents and shampoos).

Analysis of the marketing factors pertinent to cosmetic sales of course showed

Cosmetic Markets *by Arthur L. Smith*

some factors to be far more important than others. Several of the major factors are discussed below:

Family Income

It is to be expected that the higher the average family income of a city, the more will be spent on cosmetics. But it is important to know the qualifications involved. Specifically, no matter how low the average family income of a city, there is apparently a minimum that must be spent on cosmetics, i. e., there is a minimum which is considered essential by the women in any economic-social strata in which they must compete for acceptance and approval.

However, once we pass above the essential level, at an average city income of approximately $2,400 per year, cosmetic expenditures rise sharply as we enter into a luxury market. This rise continues until an average city income of approximately $3,500 is reached, and then there is a levelling off . . . a continuing increase in cities of high incomes, but at a much slower rate.

Female White Collar Workers

For cities with similar income, more money is spent on cosmetics in areas with a large number of females at white collar jobs than in areas with fewer female white collar workers. This, of course, is inspired by the female acknowledgment of the standards of appearance which must be met in such working situations.

Married Women

Several interesting sociological sidelights have come to our attention in the course of this survey. One, for example, is the surprising wide variation among U. S. cities in the per cent of women married, such as 70 per cent of the women over 14 years of age in Fort Worth, Texas, are married compared to 56 per cent in Boston. The ratio of married women to female population shows a high degree of correlation with the rate of *(Continued on page 262)*

Newer Skin Protectives

by Milton A. Lesser

Skin protective or barrier creams have attained an important place among the methods designed to prevent occupational dermatoses. Serving to protect the skin against the irritants encountered in industry, the professions and the home, these products are constantly being improved from the standpoint of both efficiency and cosmetic elegance. New materials, such as the silicones, have also been adapted to the formulation of skin protective creams.

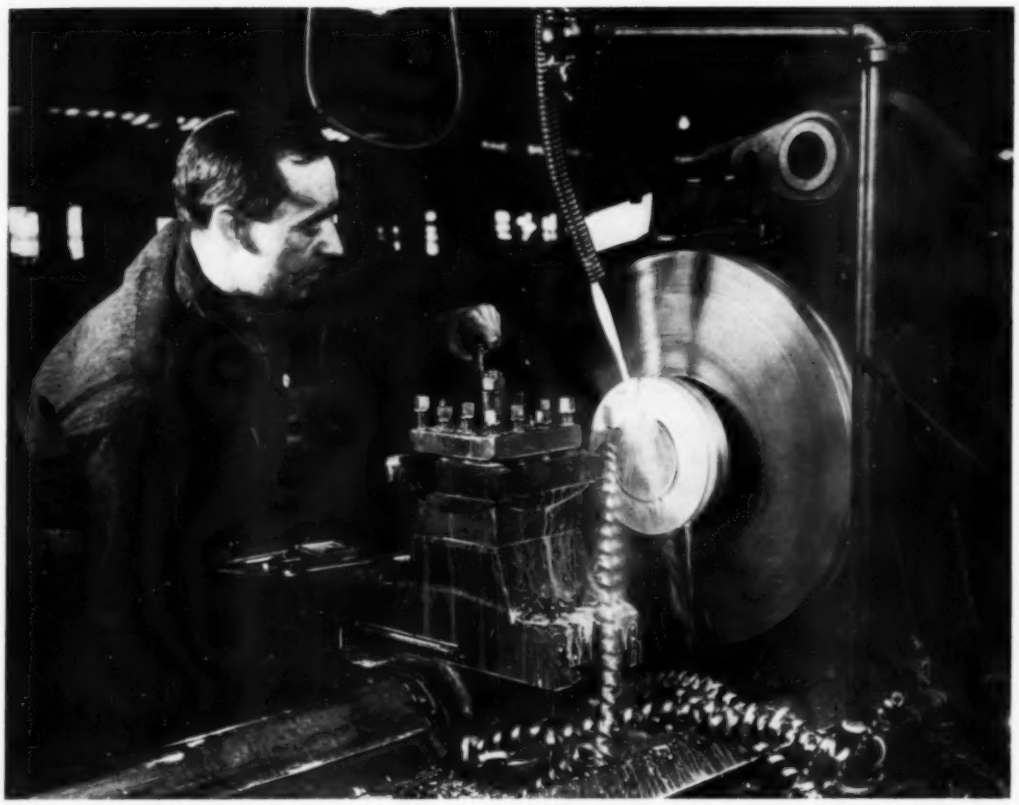
As remarked by Campbell,[1] the number of protective creams and cleansers available on the market give some idea of the medical and economic importance of occupational dermatoses. He states that in certain industries the proportion of workers afflicted by these skin conditions may be as high as 10 to 15 per cent. The importance of barrier creams as skin-protecting aids is also reflected in figures which indicate[2,3] that occupational dermatoses comprise as much as 65 per cent of all sickness of industrial origin.

It has been found[4,5] that an average of one per cent of the workers in this country suffer from occupational dermatitis. Considering that 60 million of our adult population comprises the working force, it becomes obvious that a large number of people are afflicted with such skin disorders at any given time.[6] Moreover, it has been estimated that the average lost time for each case is ten weeks.

In addition to the inconvenience, discomfort, pain, and disability which they cause, these skin conditions are also economic liabilities; the cost of these disorders in lost time, medical care and compensation running into the millions of dollars. From a study of compensation records, it has been calculated that industrial cutaneous disabilities in this country cost 100 million dollars each year and that the medical care expenses for these cases averages $90 per person.[2,7]

There is a growing realization that occupational dermatitis is not limited to the plant or factory, but also affects the professional man, the white collar worker, and the housewife. Epstein,[8] for example, points out that physicians are exposed to many irritating chemicals in their professional routine; contact dermatitis being the commonest type of injury suffered by doctors. Among the more frequent causes of such dermatologic conditions are scrubbing, rubber gloves, local anesthetics, antiseptics, and antibiotics.

Even though skin eruptions are not common among office workers, they do comprise about three per cent of the cases seen by the industrial dermatologist.[9] Of growing frequency are cases of dermititis caused by substances contacted in the home.[5,10] Household cleaners, especially some of the newer detergents, rank high among the materials responsible for these skin disorders.[11,12] Recognition of these facts has led to the development of special skin protectives for the housewife.



EWING GALLOWAY PHOTO

It is evident from the foregoing that many substances are capable of causing occupation dermatoses. It is said[13] that at least 350 substances commonly encountered in industry involve a definite risk to the skin. Obviously, this number steadily increases as new compounds are introduced into industry and commerce. However, as remarked by Phillips,[10] no substance can be considered to be entirely free from the risk of producing a contact dermatitis, but the main causes can be classified as (a) mechanical—e.g. abrasion, friction, sand, dust, metal particles—(b) physical—e.g. radioactive materials, heat, and humid atmosphere—and (c) chemical.

Chemical causes for industrial dermatitis which, as noted by Schwartz,[7] account for 80 per cent of the cases, can be divided according to their action on the skin into primary irritants and sensitizers. Primary cutaneous irritants may be defined as agents that will cause dermatitis by direct action on the normal skin at the site of contact if allowed to act in sufficient intensity or quantity for a sufficiently long time, and without the necessity for previous sensitization.[14] This group includes acids, alkalis, most solvents, oils, pitch and tar, plating solutions, photographic chemicals and many other substances frequently handled in industry.[13]

Cutaneous sensitizers are described as substances that do not necessarily cause demonstrable skin changes on first contact. After a variable incubation period, depending on the offending agent, further contact with the substance will cause a dermatitis as a result of sensitization. Examples of such cutaneous sensitizers are dyes, tar and phenol derivatives, plants, pollens, and flour.[10]

Brodey[14] cites a study, based on reports made prior to 1939, of some 10,000 cases of occupational dermatoses from which it was found that about 80 per cent of the cases were caused by primary irritants and by secondary infections. Allergenic substances caused about 20 per cent. *(Continued on next page)*

NEWER SKIN PROTECTIVES *(Continued)*

Somewhat different figures were obtained by James and Bleiberg[15] from a survey of 3,042 cases of occupational dermatoses seen during the period from 1935 to 1950. Their data showed that 32.5 per cent of all the industrial cases were produced by sensitizers. Petroleum and petroleum derivatives accounted for 21 per cent. Trauma produced 14 per cent. Primary irritants produced 20.1 per cent of the cases, of which 8.7 per cent were caused by cleaners, 6.6 per cent by acids and alkalis, and 4.8 per cent by soap and water or by water alone. Primary or secondary infections totalled 5.5 per cent of the cases and physical factors, such as heat, cold, dampness and explosion accounted for 5.2 per cent. A miscellaneous group made up 2.3 per cent.

The difference between the earlier and the more recent statistics may, of course, be a reflection of the wider use of preventive measures against the more familiar types of offending substances, especially the more readily recognized primary irritants. In any event, the foregoing data lend emphasis to the continued need for using all methods for preventing occupational dermatoses, including the application of appropriate skin protective creams.

Obviously, the use of barrier creams is only one of several basic methods for protecting the skin of the worker. For example, some industrial physicians[15,16] stress the importance of selecting workers for various jobs on the basis of certain physical and physiologic considerations. Thus, it is advised that workers with finely textured skin, as well as those with dry or senile skin, should not be employed where they will be exposed to strong primary irritants. People who are light sensitive, such as blondes and persons with red hair and freckles, should not be employed in industries where they will contact petroleum products. Race and age, it is noted, also are factors to be considered in job assignments. Dark-skinned people are less affected by exposure to light, heat and petroleum products. Senile skin, it is stated, reacts very poorly to wet work.

In contrast are the observations made by Phillips.[10] From investigations to determine whether any particular type of person was prone to develop dermatitis, it appears that: (a) There is no particular age at which occupational dermatitis is likely to develop, (b) There is no appreciable difference between the observable physical characteristics of various groups; the complexion and color of hair giving no indication of a predisposition to develop occupational dermatitis, and (c) There is no significant evidence which indicates that a history of sensitivity towards sunlight gives any warning of a tendency to develop occupational dermatitis.

There is, however, definite agreement that personal and environmental cleanliness are primary considerations in any dermatitis-preventing program. As pointed out by Schwartz,[7] personal cleanliness keeps irritants from remaining on the skin for long periods and thus lessens the chance that they will injure the skin. Environmental cleanliness tends to prevent soiling of the clothes and the skin and thereby makes it easier to maintain personal cleanliness.

This well-known authority emphasizes that adequate washing facilities should be provided for the workers, as well as suitable cleaners for removing soil from the skin. On some jobs where the clothes become excessively soiled with irritant or toxic substances, it is advisable to provide daily clean work clothes and underclothes, and a double set of lockers.

Skin protective creams and ointments now have a well established place in many dermatitis-preventing programs, and their use is constantly expanding. In discussing the use of such preparations, Schwartz points out that the use of protective ointments encourages personal cleanliness because workers always wash these ointments off the skin before going home, thereby removing much of the potential irritation from the skin. Other authorities[17] have similarly observed that the use of a protective or barrier cream tends to make workers more cleanliness conscious.

However, as stressed by Phillips,[10] it must be made clear to workers that these creams and ointments comprise only one of the methods developed for their protection. He warns that reliance on these creams alone with neglect of other measures "will invariably result in failure."

In order to perform satisfactorily, a protective ointment should meet certain requirements, and standards for these products have been evolved over the years. Peel,[18] for example, is of the opinion that a properly formulated barrier cream should have the following properties: (a) Good consistency and ease of application, (b) Good and reasonably persistent adherence to the skin, (c) Ability to form a coherent, impervious, flexible and non-cracking film, (d) Freedom from any tendency to irritate the skin, (e) Ease of removal when desired, (f) Esthetic acceptability, from the point of view of comfort on application, relative imperceptibility, and the like.

In another listing[13] of desirable characteristics for skin protective creams it was suggested that such a product should preserve the skin tissues in a healthy condition and hence should contain a reconditioning factor to repair surface damage. It was also felt that the barrier cream should be bacteriostatic to prevent infection through surface damage to the skin. In passing it may be mentioned that in some products this effect is achieved by including hexachlorophene in the formulas. Finally, it is noted that while a cream may meet all the basic requirements, it must also be economical to use. *(Continued on page 266)*

AEROSOL Sun Tan Preparations

by Harry Hilfer

COURTESY HELENA RUBINSTEIN

The advantage in aerosol preparations is their greater ease of application and would therefore be welcomed presumably wherever a coating is desired with a minimum of effort in application. Though some sun preparations have appeared, they have not as yet been accepted by cosmetic manufacturers as a whole. It seems reasonable to suppose however that they will be more thoroughly exploited than they are at present. The reasons for this supposition are because the metal container in which the product is packaged will not break or be damaged as readily by rough treatment as would a bottle and because the preparation must be applied over a relatively large body area which is more readily accomplished by spraying than by manual application.

Formulation of an aerosol sun screen preparation involves a careful check of a few factors. The first is the compatability of the chosen screening agent with the propellant. Since these agencies are chosen from a large number of chemical classifications a generalized rule can not be laid down. It is fortunate, however, that almost all of these commercial sun screens are readily soluble in alcohol and their solution in the propellant can be accomplished by judicious use of alcohol as a common solvent, since alcohol is readily soluble in the propellants. It is a good rule to keep the alcohol concentration at a minimum to avoid the "torch effect" and a preponderance of the non-inflammable halogenated hydrocarbons which comprise the propellants effectively reduces this hazard.

As long as the sun screen may be easily incorporated in this solvent, the choice of the best sunscreen for the individual product would further depend on the properties desired. Sunscreens are designed to block the transmittance of harmful ultraviolet rays to the skin which is generally thought to be between 2900 and 3150 Angstorm Units. Such an absorption would tend to minimize painful burn but still allow tanning. If tanning is undesirable as well, the longer Ultraviolet rays may also have to be blocked.

There are a large number of materials commercially available which are capable of use for this purpose. On a quantitative basis many show better absorption than others, but on a cost basis, the poorer screens may be used in larger concentrations to be as equally effective as smaller concentrations of the better agencies at a lower cost. A secondary problem is the determination of the sun life of the screen since some screens undergo a chemical change on ultra violet irradiation after a short period of exposure to render them ineffective.

It is further advisable to include in the preparation a protective film to reduce the possibility of the screen being removed by water. Most of the agencies are relatively insoluble in water, but subjection of the film to large amounts of water as would be done in swimming, could remove a large percentage of it. There is a good number of substances which could fit into this category. Isopropyl myristate for one has an extremely low viscosity and is quite immiscible with water. It is, in addition, soluble in absolute alcohol and the propellant and should therefore fulfill its function very well. There has appeared recently a large number of silicones which in theory should be superior.

There are silicones now available which are soluble in alcohol and they seem to fit into the formulation properties very well. The alcohol soluble silicones are low viscosity liquids and are also soluble in halogenated

(Continued on page 259)

A.D.M.A.

A renewal of discussions with the Department of Health, Welfare and Education leading to decertification of antibiotics has been decided upon by the American Drug Manufacturers Association. This decision was revealed in the lengthy report of Leslie D. Harrop, retiring General Counsel and Chairman of the Legislative Committee of the Association. In his report to the annual meeting of the Association at Lake Placid, N. Y., which was mainly devoted to the subject of certification of antibiotics, Mr. Harrop gave many tables and charts to justify the conclusions arrived at by the Association. But he concluded as follows:

"However, as it was at the time of the Christian wars, both sides pray to the same God with opposite results. So has it been so far between industry and the Food and Drug Administration. We each rely on the same facts but reach different conclusions.

"Possibly the only way in which less could have been accomplished by way of resolving this knotty problem in the last four or five years would have been to place it before a Geneva Conference. . . . We do not feel that there is anything in the record that we have discussed that would indicate or argue for the extension of certification as a means of drug control. We think to the contrary that once the earlier phase of antibiotic production and testing was passed, that antibiotics fall into exactly the same pattern as all other drugs. We feel confident that they can be controlled adequately under the usual and normal processes set up for all other drugs."

Adam Hastings Fiske, new president of A.D.M.A.

Mr. Harrop pointed out that certification for penicillin, streptomycin, dihydrostreptomycin, chlortetracycline (Aureomycin), chloramphenicol (Chloromycetin), and bacitracin, from the start on penicillin on July 6, 1945 to May 1, 1954 has cost $5,267,013.80, and that currently the cost is running in excess of $800,000 per year.

While the above six antibiotics are subject to certification, there are six others which have come on the market under the new drug section of the Food, Drug, and Cosmetic Act just as any other drug would be brought on the market. These drugs are oxytetracycline (Terramycin), neomycin, viomycin, erythromycin, carbomycin, and polymixin. Mr. Harrop said, "There is no evidence that such freedom from certification has resulted in the failure of these antibiotics to meet proper standards of strength, quality, safety, or efficacy."

With regard to penicillin, Mr. Harrop pointed out that rejections for all lots submitted for certification during the seven and one-half years from September 1945 through April 1953 totaled only 0.68 per cent. After the first three and one-half years rejections dropped sharply. A total of 392 of the rejections, or 71.4 per cent occurred prior to 1949. From January 1949 through April 1953, the last four and one-half years, the rejection rate was 0.3 per cent, or 157 batches out of 51,636 submitted.

Similarly with streptomycin and dihydrostreptomycin, Mr. Harrop noted that the rejection rate was surprisingly low. He noted that 63.4 per cent of the rejects occurred prior to January 1950 and that the rejection rate since that time amounted to only 0.35 per cent. The lower rate for the latter period is due

Meeting

primarily to the fact that the clarity requirements have been dropped, a cause that accounted for 31 of the 45 rejects in the earlier period, said Mr. Harrop, who added, "If this cause is eliminated then the overall rejection rate would be only 0.35 per cent.

Bacitracin rejects were also very low. There were no rejections for toxicity or other serious defects, said Mr. Harrop, who pointed out that this was quite remarkable in view of the fact that the toxicity of bacitracin has been a factor of major concern.

Chlortetracycline (Aureomycin) rejections from August 1949 to April 1953 totaled 11, nine of which occurred in 1950 and two of which occurred in 1951, for a percentage of 0.29. Mr. Harrop pointed out that six of the nine rejections in the one year were due to the histamine test on intravenous products, the variations and interpretations of which test make the physiological significance of this statistic questionable.

Chloramphenicol (Chloromycetin) rejections for the period from August 1949 to April 1953 stood at zero. Mr. Harrop commented:

"On the basis of this record, what does it require, in the way of demonstrated ability to manufacture, for the Administrator to decertify a drug? Here we have a product produced by only one manufacturer, there never has been a rejection for any cause, and yet it is still under certification, although Section 507(c) of the Food, Drug, and Cosmetic Act directs the Administrator to decertify any product when certification is no longer necessary for the safe and efficacious use of the drug.

In reporting for the Pharmaceutical Contact Committee, Dr. F. O. Taylor, of Parke, Davis & Company, chairman, said:

"For some years we have discussed the possibility of preparing water meeting the U.S.P. requirements for "Distilled Water" by a de-ionization process. After accumulation of much data we recently recommended the official recognition in the U.S.P. of "Purified Water," the standards to be those of the present "Distilled Water" but permitting manufacture by means other than distillation. This will probably be done in U.S.P. XV.

"We have recommended standard methods for testing enteric coatings of tablets, and also, tentatively, similar methods for regularly coated tablets. We have revised and enlarged the list of tablets for which times of disintegration may be given in the U.S.P. and N.F.

"Extensive studies have been made of test procedures for sterility of medicinal products which must be sterile, and also of a revised form of the official test for pyrogens in Injections. We have recorded our approval of the sterility test recommendation made by the A.D.M.A. Biological Section and have also indicated agreement with the revised pyrogen test worked out by a special U.S.P Panel.

"We have made certain recommendations regarding a new method of assay of digitoxin. We believe that some phases of the proposed tests are still open to criticism and the subcommittee dealing with this question will continue to work with the U.S.P. Revision Committee as may be necessary.

"The subcommittee on tests and standards for rubber closures has accumulated a considerable amount of data, much of which indicates that some of the proposed tests are not useful for the purpose intended. They are not ready as yet to make any positive recommendations. . . .

"What the chairman regards as the most important subject to come before the Combined Contact Committee this year was a discussion at the Spring meeting of the World Health Organization and international drug standards as now presented in the book denominated the 'International Pharmacopoeia," the second volume of which is already in course of preparation. . . .

"It is our belief that international standards for drugs should not be such as to exclude drugs fully meeting the standards of modern national pharmacopoeias. For example, the recently proposed monograph for P.I. Volume II, on Thyroid sets up a standard and method of assay such that a product meeting either the U.S.P. or B.P. standards may not comply with it."

Dr. Albert H. Holland Jr., Medical Director of the Food and Drug Administration, cited the following basic truths which he believes are applicable to the drug industry:

"1. The manufacturer's (and the individual's) most precious possession is his good name.

"2. It is not good business to promote a fraud.

"3. Safety of use is a necessity—both legally and morally.

"4. What is really good for the patient is good for the manufacturer—and likewise, what is bad for the patient is bad for the manufacturer. *(Continued on next page)*

A.D.M.A. MEETING *(Continued)*

"5. The manufacturer of medicines for human consumption assumes a degree of responsibility unequaled in other industries.

"In the division of medicine many of our actions are determined by existing legislation," said Dr. Holland. "We are human, however, and I suspect that we, like you, are subject to conditioned reactions based on individual past experiences. Perhaps this is not all bad. As a matter of fact, I'm firmly convinced it is not. On occasion I have heard some remarks calling attention to so-called inequities and lack of consistency in the manner in which various drugs and drug categories have been considered.

"In some instances the law directs a course of action. Where this is not so specifically the case, then the problem of interpretation and these competitive complaints, if you will, arise. While we in the Food and Drug Administration must be dedicated to impartiality and fairness, I for one do not embrace the doctrine of complete consistency and absolute uniformity. This doctrine carried to its ultimate conclusion is in effect a repudiation of our system of free enterprise.

"Lest I not be clear, I hold no brief for irresponsibility. That must always be controlled with whatever measures are necessary. Contrary to the thoughts of immediate gain, under the guise of the 'if they can do it, why can't we?' philosophy, there really is great danger and perhaps irreparable loss inherent in this kind of situation. Consistency is desirable when it takes due cognizance of safety and when it promotes progress. But consistency must always be reconciled first with facts, next with informed medical thinking, and finally with practical reality."

Describing the new drug provisions of the law as "the very heart of our medical operations," Dr. Holland said,

"The potential benefits of a new drug to human misery must always be reconciled with its potential harm. We approach this problem with faith in the integrity of the data, with faith in the integrity of the firm submitting the new-drug application. We cannot and will not allow faith to replace good scientific critique. But it is important, I believe, for you to know that we do, and in fact, must, view these matters with an open mind, devoid of personal prejudice and in good, but not blind, faith."

"The contributions by the drug industry to health and the practice of medicine," Dr. Holland contended, "are without doubt some of the major achievements and benefits of the civilized world. We all speak of the blessing of good health. But I wonder how many of us really stop to ponder the basic nature of health. Actually it is a somewhat odd concept difficult of definition. It is most readily described in terms of its absences. The presence of good health permits happy active life, but the lack of good health presents varying degrees of personal tragedy.

In the first place health is always personal. Poor health immediately involves one individual but may impinge on the health and happiness of many. Sickness places in jeopardy the entire future both economic and social. One may have to change occupations, deplete family financial reserves, accept many serious limitations in physical activities and social activities. Continuation of life itself is often an unanswered question which rocks the very foundations of an individual's personal security.

"With this as a background," he said, "I would like to make one cardinal point. For almost all of the other situations and endeavors in life the individual can pretty much act independently and chart his own course. He can try for the job he wants, he can work for the home he wants, he can do his own thinking and arrive at his own conclusions. However, in the most personal matter of all, where every aspect of his security and activities is affected, he must place himself in someone else's care. He must entrust his very life to the doctor.

"The opportunity for deliberation and self-determination which he usually enjoys is largely precluded. Strange instruments, unusual postures, painful procedures, new drugs—all are accepted without being well understood. Even the language and nomenclature is strange and foreboding. The patient sustains this tremendous psychological impact of illness primarily on the basis of faith in his physician. He has faith in his doctor's judgment—and in his doctor's tools and their ability to restore his health. Not the least important of these are the drugs he employs."

"The submission of new-drug applications should be more than just a compilation of literature statements in an effort to meet legal requirements," Dr. Holland asserted. "There should be some real substance, some supportable facts in addition to opinion. This cannot be the case in the absence of faith and honor. Mistakes on your part, and equally true, mistakes on our part, can, and have, cost needless lives. We will therefore continue to be cautious, but always constructive.

"I recognize the point of view of some that, 'our company wouldn't jeopardize its reputation or market position by letting a drug go that we weren't certain about.' In fact, I am sure that in most cases this is actually so. However, you have sufficient experience to recognize that on occasion when unforeseen difficulties do arise, prior Food and Drug Administration approval becomes a very comfortable feeling. This is perhaps as it should be and certainly we don't intend to shirk this responsibility. In order to fulfill it properly, however, we must have your help, your cooperation, and at times even your indulgence!

"It is not overstatement in my opinion to say that the progress of medicine and patient care is directly

(Continued on page 264)

by V. D. Johnston

ANALYTICAL LABORATORY OF THE GIVAUDAN CORPORATION

ALDEHYDE DETERMINATION BY Oximation

The accuracy of the hydroxylamine method for the determination of aldehydes has for many years been disputed, as reference to the many papers in the literature will confirm. It is not the intent of this paper to review the literature, since two excellent papers have already done this thoroughly.[1-2]

Two problems emphasized in the literature are: (1) The formation of acetals during oximation and (2) The accuracy of the end-point in the titration. Most of the papers deal with one or both of these subjects and many small changes in technique have been suggested to reduce or solve these problems.

This paper describes a modification of the hydroxylamine hydrochloride[3-4] method, through which acetal formation is prevented. This is accomplished by substituting a tertiary alcohol as solvent in place of the conventional methanol or ethanol. Furthermore, by using a pH meter to establish the end-point in the titration, the accuracy of both the hydroxylamine[5] and the hydroxylamine hydrochloride methods are greatly improved.

In this laboratory, the determination of aldehydes is conducted on a routine basis. For this reason, the procedure and the apparatus described are designed for routine work.

The method does not present an improvement in the determination of ketones since the problem of ketal formation is not as pronounced as is that of acetals. However, the end-point in the potentiometric titration of both aldehydes and ketones is definite and much more accurate than in the colorimetric titration.

Below is a list of representative aldehydes, which can be tested by the modified procedure described. Aldehydes which are unstable in presence of hydrochloric acid such as citronellal cannot be determined by this method.

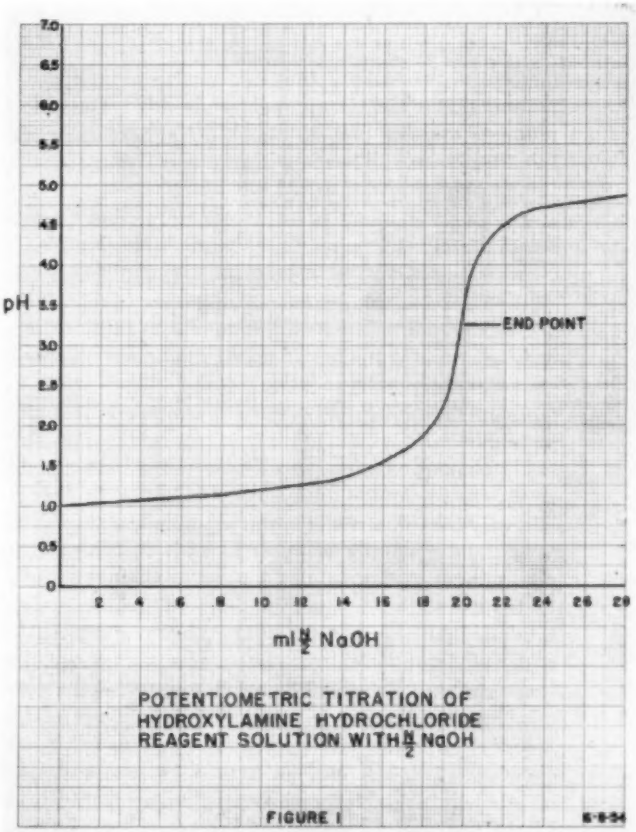
Aliphatic Aldehydes
Anisic Aldehyde
Benzaldehyde
Cinnamic Aldehyde
Cuminic Aldehyde
Cyclamen Aldehyde
(a-methyl p-isopropyl hydrocinnamic aldehyde)
Furfural
Heliotropin
Hydroxycitronellal
Phenyl Acetaldehyde
Phenyl Propyl Aldehyde
Vanillin

Reagents:

1. Aqueous NaOH (0.5 normal) accurately standardized.
2. Bromophenol blue indicator (0.5 per cent) prepared as follows: Triturate 0.1 gm. of bromophenol blue with 3 ml. of 0.05 N NaOH. When solution is complete, dilute to 25 ml. with distilled water.
3. Hydroxylamine hydrochloride reagent prepared as follows: Dissolve 45 grams of a good grade of hydroxylamine hydrochloride (such as Merck's Reagent or any grade conforming to the ACS specifications) in 130 ml. of water. Add 5 ml. of bromophenol blue indicator and 850 ml. of tertiary butyl alcohol. Mix and neutralize to a pH of 3.0 to 3.5 with NaOH. (See Fig. 1.)

The proportions of hydroxylamine hydrochloride, watter and tertiary butyl alcohol must not be varied from the suggested reagent because of solubility difficulties.

(Continued on page 265)



Selecting Polyethylene

by Joseph L. Kanig and Leonard Chavkin
ASS'T PROFESSORS OF PHARMACY, COLUMBIA UNIVERSITY COLLEGE OF PHARMACY

Although the non-ionic surface active agents in general and the polyethylene glycol esters in particular are a relatively new class of materials, they have been used successfully as emulsifying and suspending agents for a variety of pharmaceutical products. As a group, the polyethylene glycol esters are perhaps the most promising agents for drug and cosmetic applications. Yet the true value of these materials has scarcely been explored. Reports on the applications of the polyethylene glycol esters are scanty, and no systematic study of their use in topical products has been reported.

Information which is currently available points to the fact that these esters are valuable from many standpoints. (a) One report[1] dealing with the topical toxicity of anionic, cationic and non-ionic surfactants indicates that the non-ionic agents are generally much less toxic than either the anionic or cationic.

(b) The pH of the finished product for application to the skin is generally considered by authorities in dermatology to be an important determinant of the sensitization and irritation produced by the product. The optimum pH that these authorities recommend for topical products is that of the acid mantle of the normal skin which is approximately 4.2. The pH of products utilizing polyethylene glycol esters as emulsifying agents usually falls within a short range around this point.

(c) The versatility of these esters has been established since they are used in the production of emulsions of both types, and as solubilizing agents, emollients, wetting agents, foaming and anti-foaming agents. They are being used as important components in hair dressings, shampoos, lipsticks, emollient lotions, cosmetic creams, and modern lotion vehicles and washable ointment bases for a variety of specific dermatological preparations.

(d) Emulsions prepared with the polyethylene glycol esters are particularly easy to manufacture in that no specialized equipment is required; these emulsions are stable and generally compatible with the more commonly used components of topical products.

Because of the chemical structure of these materials, it is possible to prepare a great number of derivatives with varying physical properties and great versatility in emulsifying powers. The origin or basis of the polyethylene glycol esters, or polyoxyethylene esters as they are more accurately termed, lies in ethylene oxide. By combination of the various fatty acids with polymers of ethylene oxide (polyethylene glycols) or by direct reaction with the oxide itself, esters can be produced

which are water soluble, dispersible or oil soluble depending upon the type of fatty acid used and the molecular weight of the polymer.

The fatty acid residue in the polyethylene glycol ester molecule confers oil solubility or lipotropic properties upon the ester, while the polyoxyethylene portion makes the compound water soluble or hydrophilic. The physical properties of any ester are determined by the balance between the hydrophilic and lipophilic portions of the molecule. If the hydrophilic portion is more powerful than the lipophilic portion, the ester will be water soluble. The reverse of this will yield an ester which is oil soluble.

The balance between the hydrophilic and lipophilic portions of the ester molecule is the crucial factor in determining the application for which the ester is best suited. Thus, the predominantly hydrophilic esters will tend to solubilize oils, prepare oil-in-water emulsions, and serve as wetting and foaming agents. Those which are predominantly lipophilic will tend to form water-in-oil emulsions, are more emollient and reduce foaming.

It would then appear that all a manufacturer need know is the direction of the balance between the hydrophilic and lipophilic portions in order to select the ester which best meets the needs for a particular product. However, a dividing line between those esters which

Glycol Esters

and Leon Lerea
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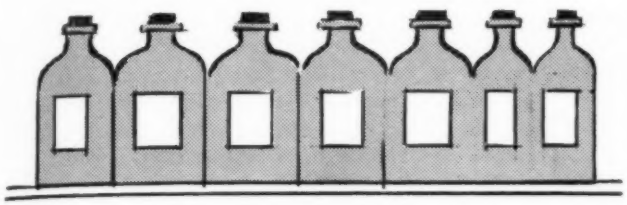


are predominantly hydrophilic and those which are more lipophilic cannot be sharply drawn. Inspection of the molecular formula of the ester will give only a rough indication as to the nature of this balance. Current methods of selection of the proper ester involve this sort of haphazard inspection and subsequent experimentation using a number of related esters until the proper ester and its concentration is discovered. This is a rather crude method of selection since there is considerable overlapping between esters as to the hydrophile-lipophile balance.

The problem of selection is made additionally confusing by the fact that the manufacturers of these polyethylene glycol esters utilize polyethylene glycols and fatty acids which may differ chemically and physically. Thus, an ester prepared by one manufacturer may possess different application properties than the same ester produced by another manufacturer.

Classification of Polyethylene Glycol Esters

Realizing the need for some system of classification for this group of compounds, an investigation was undertaken to discover the degree of balance between the hydrophilic and lipophilic groups in the molecules of the polyethylene glycol esters.* The research had as its two principle objectives the classification of the esters whereby they could be listed in some logical fashion and a correlation of such a classification with emulsification tests designed to indicate the validity of the classification system.

A system such as the HLB classification as developed by the Atlas Powder Company for their non-ionic emulsifying agents was envisioned as the optimum culmination of such a study. In order to make this study as practical as possible, commercially available esters were used. These were supplied by Kessler Chemical Company of Philadelphia and Glyco Products of Brooklyn.

It was decided to seek a means for determining the activity of the hydrophilic group in each ester and use this property as one of the bases for establishing the system of classification. It should be noted that the esters are less soluble in hot than in cold water. This property is based upon the association of the hydrophilic groups with water.[2] As the temperature increases, the degree of association becomes less; separation finally occurring when the critical temperature is reached. This phenomenon was considered important as an indication of the degree of hydrophilicness of the particular ester. It was hoped that the establishment of the degree of hydrophilicness would serve as a guide to the nature of the hydrophile-lipophile balance in the molecule. As a result of experiments using this property as an index of hydrophilicness, Table I was devised. This table indicates the critical temperatures at which 0.5 per cent solutions of the particular esters became turbid.

Table I. Critical Temperatures of Some PEG Esters

Ester	Separation Temperature (°C.)** Glyco	Kessler
PEG 200 monolaurate	25	32
PEG 300 monolaurate	*	47
PEG 400 monolaurate	35	63
PEG 600 monolaurate	62	65
PEG 1000 monolaurate	*	84
PEG 200 monooleate	12	15
PEG 300 monooleate	34	35
PEG 400 monooleate	40	36
PEG 600 monooleate	52	45
PEG 1000 monooleate	73	*
PEG 200 monostearate	5	5
PEG 300 monostearate	50	54
PEG 400 monostearate	52	55
PEG 600 monostearate	40	60
PEG 1000 monostearate	93	88

* = This ester not available at the time of investigation.
** = The temperature at which 0.5 per cent aqueous solutions or dispersions became turbid.

It is evident from the arrangement of the esters in the table that there is some logical relationship between the critical temperature and the degree of hydrophilicness of each ester. The least hydrophilic esters manifest the lower critical temperatures while the more hydrophilic members of the series separate at higher temperatures. It is interesting to note that, as indicated previously, samples of the same ester produced by two different manufacturers have different critical temperatures. We could then assume that they could not be used interchangeably for a particular application unless the different emulsification properties are determined and formula modifications made accordingly.

Table I does not list critical temperatures for all the available polyethylene glycol esters since many of them appeared to have a separation temperature below room temperature or even below zero degrees. Upon lowering the temperature it was found that most of these esters (particularly the stearates) solidified out of solution. This made it impossible to ascertain the critical temperature of these by the method employed. Many of the esters possessing very strong hydrophilic groups maintained clear solutions even in boiling water. This placed another limitation upon this method as a means of arranging the esters in a series.

(*Continued on page 253*)

*Conducted at Columbia University College of Pharmacy by Leon Lerea in partial fulfillment of the requirements for the degree of Master of Science, June, 1953.

Odor and Olfaction-

Nerve Impulse

Since olfactory receptor cells are nerve cells, any information available as to the way nerve cells act would assist us in understanding how odorants affect olfactory cells. Unfortunately the biochemistry of nerve action is only incompletely understood. There is no unanimity among nerve physiologists as to the mechanism of nerve impulse. Nachmansohn has been a leading proponent of the view that cholinesterase plays an important role in nerve function, and the following brief summary largely follows his work.[30,31,32]

The nerve cell membrane is believed to be formed largely of protein chains, with a definite number of combining spots for ions, and a number of enzyme "spots" composed of enzymes stuck at or near the surface. The cell surface has relatively high electrical resistance, of the order of 1000 to 10,000 ohms per sq. cm.

In the resting nerve cell a potential difference exists between the inside of the cell and the outside of the membrane, probably as a consequence of the ionic gradients maintained, potassium being much higher, and sodium lower, inside the cell than outside. During rest, there is a continuous slow movement of ions in both directions, but during nervous activity, the permeability of the membrane to ions increases, in some cases to 500 times its resting level. This permeability change is thought by Meyer[33] to be brought about by release of ionic molecules which effect a change in the protein of the membrane. Nachmansohn states that the appearance of a cation such as acetylcholine would account for such a reaction, producing the folding or unfolding of protein chains which would result in increased permeability.

Cholinesterase and Nerve Impulse

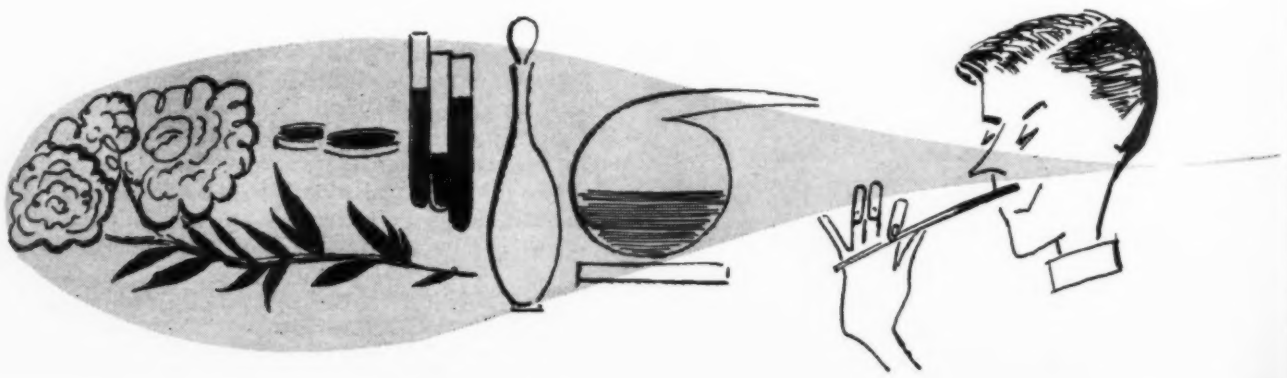
The circumstantial evidence pointing to cholinesterase as an active participant in nerve conduction is abundant. It has been found in all animal conductive tissue examined, and has not been found in non-conductive tissue, with the exception of red blood cells. The only known biochemical process occurring at the speed required for nerve activity is the breakdown of acetylcholine by cholinesterase; this action may occur in detectable amounts in three to four micro-seconds. The breakdown of adenosine triphosphate, considered to be directly involved in muscular action, is too slow for nerve action. ATP does however appear to furnish energy for synthesis of acetylcholine, which is slowly accumulated and bound to protein or lipoprotein. Release of free acetylcholine from this bound state is believed to be the trigger which fires the cell's charge, by changing the permeability of the protein membrane. The free acetylcholine is then destroyed, within a few micro-seconds, by cholinesterase, allowing the cell to revert to the resting state.

We do not know how well the mechanism just described represents that operating in the olfactory cell, but it may at least aid in visualizing methods by which odorants may initiate olfactory sensations. Any attribute of an odorant that would enable it to affect any step of the above process should be examined as potentially an attribute responsible for production of odor.

Acetylcholine

In addition to Nachmansohn's extremely enlightening studies on the role of acetylcholine in nerve reduction, interesting results have been obtained on effects of various compounds on the acetylcholine system. Lands[34] found that a large variety of structurally diverse molecules could act upon the acetylcholine-sensitive receptor of heart or intestine to induce stimulation. The most effective compounds have at least one methyl group in the cationic head and a terminal methyl group at a distance of about seven angstroms. Greig and Holland[35] found that the permeability of the hemoencephalic barrier of frogs was increased when

*Delivered before Scientific Section, the Toilet Goods Association.



Biochemical Approaches* PART II

by Paul G. I. Lauffer, Ph.D.

CHIEF CHEMIST, THE GEORGE W. LUFT COMPANY, INC.

cholinesterase was inhibited by physostigmine; they concluded that the acetylcholine-cholinesterase system may have a widespread function in maintaining the normal permeability of the living cell.

Many of the nerve poisons used in agriculture and in warfare are phosphates, and Wills[36] traced the activity of such compounds labeled with radioactive phosphorus or carbon. He found that both the alkyl and the phosphate groups react with the protein, cholinesterase, which they inhibit. By blocking active sites on the enzyme, they allow acetylcholine to accumulate, since the blocked enzyme cannot destroy it. This action makes impossible the rapid alternate production and destruction of acetylcholine supposed to be essential for continued nerve activity.

Ing[37] noted that among choline-like drugs of the type $RN^{+}Me_3$, the most active members usually have a chain of five atoms (excluding hydrogen) in the group R, and that successive replacement of methyls on the nitrogen by either hydrogens or ethyl groups caused a steep decline in activity. Replacement of nitrogen by phosphorus or arsenic diminished but did not abolish activity. These results point to a fairly precise fit between the drug cation and some macromolecular structure in the living cell.

Bovet[38] gives a detailed treatment of the structural factors involved in the activity of acetylcholine, and Schueler[39] has summarized these in developing a hypothesis connecting such factors with the activity. He concludes that activity depends on close correspondence between the *distribution* of distances between polar groups in the drug and the *distribution* of corresponding distance in the receptor protein. The key factor would not be the distance between active centers in the fully extended state of the molecule, but rather the *statistical distribution* of distances among the molecular population. Schueler supports this hypothesis by showing that a cyclic compound containing the acetylcholine skeleton held rigidly with the polar groups at or near their maximum distance is a much less active drug than similar compounds with the cycle broken so that the chain is flexible and the polar groups can assume positions at varying distances.

Active Moieties

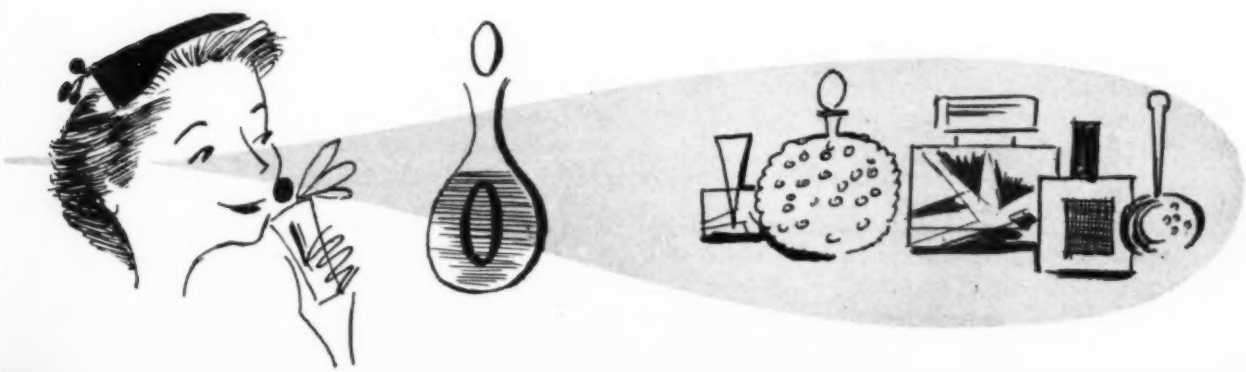
Schueler[40] has also contributed to the modification or possibly to the rejection of the concept that the whole molecule of a drug or an odorant must fit into the receptor of the cell before reaction can occur. Only a certain "active portion" or "moiety" of the molecule fits the receptor. The rest of the molecule is important only insofar as it modifies the shape and dimensions of this active moiety; all that is required of the remainder is that it shall not hinder the active portion, or restrain it from fitting the receptor. Evidently added groups will heighten activity if they favor molecular distribution in the direction of optimum size and shape of the active moiety.

Attacking the problem from a slighly different angle, Hey[41] adduced evidence that the pressor effects of a series of choline derivatives were associated with reduction of electron density of the "ether" oxygen of choline ethers and esters.

Action of Cholinesterase

A study of the effect of pH on enzymic hydrolysis of acetylcholine and related compounds led Wilson[42,43] to conclude that cholinesterase must contain an anionic site which does not take part in hydrolysis, but which makes the enzyme specific because it holds the cationic head of acetylcholine, by van der Waals and ionic forces, at the proper distance from the esteratic site where a covalent bond is formed between a basic group of the enzyme and the acyl carbon of acetylcholine. Choline is then released from the complex, leaving an acetylated enzyme which is readily hydrolyzed by water to give back the free enzyme and acetic acid. The poisoning action of fluorophosphates is explained as due to formation of a phosphoryl enzyme which is not easily hydrolyzed.

(Continued on next page)



ODOR AND OLFACTION— BIOCHEMICAL APPROACHES *(Continued)*

The Esteratic Site

From the dissociation constants involved, Wilson suggested that the ring nitrogen atoms of imidazole derivatives fit most closely the specifications for the esteratic site. Such derivatives have not only the needed dissociation constant, but also the high electron fluidity between the acid and basic groups which is necessary for easy hydrolysis of the acetylated enzyme.

Mechanism of Olfaction

We have cited a variety of biochemical discoveries and postulates, many of them apparently far afield from our subject. How do these studies assist us in understanding olfaction? Examination of current odor theories will reveal how extensively they may be modified and improved in the light of modern biochemistry.

In 1951, Moncrieff reviewed theories of odor and decided that the most acceptable theory called for an odor-producing substance to be (1) volatile, and (2) of such molecular shape that it will fit certain available molecular sites in the olfactory receptors, and therefore adhere to them. He concluded that it made no difference whether one regards this adherence as a chemical addition reaction, as solubility, or simply as filling a gap.

It should be evident that such "adherence" is only the first step of a mechanism which must be more clearly defined, and that it makes a great deal of difference whether odorants react, dissolve, or simply fill gaps. Danielli[44] has stressed the variety of different means by which drugs may affect cells, and the same applies to odorants. The cell contains many simultaneously acting physico-chemical systems, and if a comprehensive quantitative treatment of cellular activity is ever achieved, it will probably involve use of electronic calculators. However, the activity of enzymes is known to be affected by drugs in at least eight distinct manners, and two or more cellular processes may be modified in different ways by a single drug. Danielli's general conclusion is that drugs often exercise one or more of their modes of action through enzyme systems; some drugs may act only in this way, or even on one enzyme only, but this degree of specificity is rare. Magnesium, curare, and cocaine appear to act primarily on the cell surface. Some foreign substances are detoxified by chemical reaction; for instance menthol is converted to its glucuronide. Different stimulating agents may act on quite different cellular systems, but the design of a cell is commonly such that these mechanisms are funneled so as to cause a response characteristic of the particular design of the cell.

Permeability

An old and rather vague idea of odor theorists held that odorants act by changing permeability of the olfactory mucosa. This may well be a part of the mechanism, for we have seen[30] that permeability changes are thought to be involved in nerve activity. However, we want to know how the permeability is changed, and we cannot explain the wide variety of odors recognizable by simply repeating "change of permeability." Hoagland[45] states that cells store potential energy, and when a local decrease of the cell membrane's permeability is caused by electrical, chemical, mechanical, or thermal means, an electric current will flow into the cell from the positively charged surroundings, at this point. The circuit will be completed by more diffuse outward flow through the intact membrane.

Welsh[46] suggests that acetylcholine may act as a coenzyme for an enzyme which plays a role in regulating membrane polarity and permeability. At any rate, whether we call acetylcholine coenzyme or substrate, consideration of an odorant's suitability for mo lifying the acetycholine-cholinesterase system appears to be a promising lead.

Molecular Shape

The idea that molecular shape is a determinant of odor can now be re-examined and made more specific. As mentioned above[10] it appears that only a certain "active portion" of the molecule becomes bound to the receptor, and that the rest of the molecule is important only insofar as it hinders or helps this binding and the subsequent events. Moncrieff attempted to explain the frequent association of powerful odor with chemical unsaturation by assuming that the resonance associated with unsaturation will enable the odorant molecule to exist in a variety of configurations, one of which may be suitable for fitting the olfactory receptor. Newer concepts would lead us to look for portions of the odorant molecule which will be complementary to the active parts of enzymes. If all enzyme actions, as Geissman[17] postulates, involve transfer of electrons along the H-bridged chain of peptide linkages, then ability to resonate in a "sympathetic" manner should connote ability to affect enzymes, and consequent physiological activity. Odorants containing conjugated systems of unsaturated linkages should therefore be examined with this concept in mind.

Volatility

Most writers on olfaction have agreed that a substance must possess a certain minimum volatility in order to affect the olfactory cells. We can agree that the substance must reach these cells in order to register, but it may conceivably arrive in other than vapor form. Turk and Bownes[47] reported that particles of carbon black, activated alumina, and various other solid

(Continued on page 270)

Parke, Davis guards against tampering and spilling

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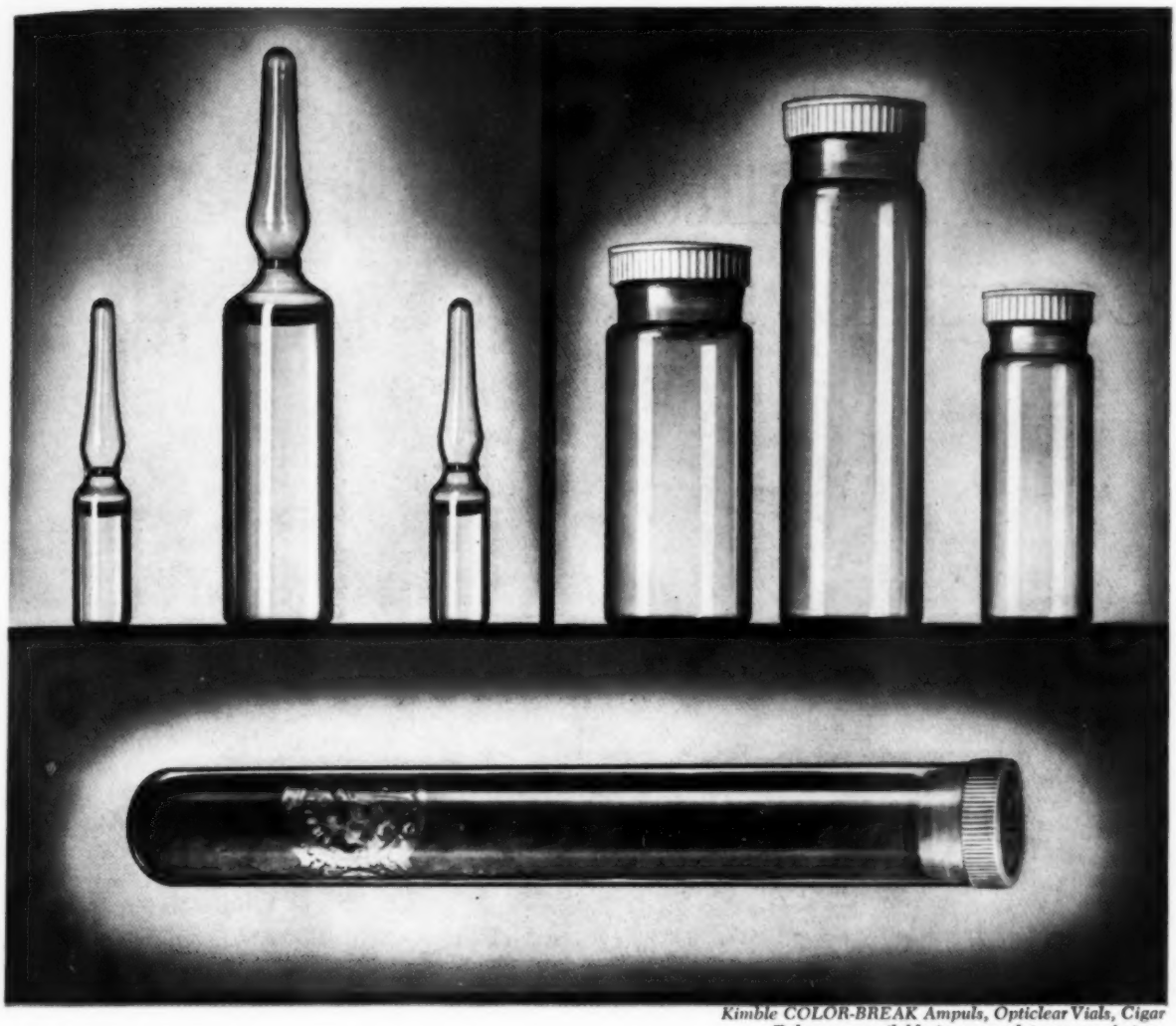

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Shipping Cases Put to Work

by Frank S. Child

The corrugated shipping case plays an extremely important part in the delivery of products from a plant or its warehouse to the ultimate customer, whether that product is a drug sundry, pharmaceutical, proprietary medicine, or cosmetic. While much time has been spent on improving the inside packing of the cases, in order to cut down on breakage during shipment, very little attention has been directed to the design and written instruction on the outside, so as to expedite the actual delivery operations.

Even today, an inspection of any of the 325 full-line wholesale drug houses in the United States will offer an amazing variety of designs, ranging from the drab, poorly stenciled, corrugated container, all the way to the excessively decorated case showing address, contents, price, product slogan, product number, manufacturer, code number, and so much more data spread on all four sides that it becomes a confusing jumble of words and numbers.

Many pharmaceutical and cosmetic manufacturers realize that the shipping cases holding their individual products can be transformed, at little extra cost, into attractive, informative containers, with just enough information pictured or written, or both, on the outside to help speed their successful delivery from plant to retail outlet. Some of these companies have already changed the design of their cases; others are about to begin.

The National Wholesale Druggists' Association, which recently published a booklet, "Getting Down to Cases," expounding the hidden value of the corrugated container, is delighted with the progress which has been made so far. But there is yet much to accomplish.

The Association feels, and the majority of manufacturers concur, that the shipping cases should do more than merely hold the merchandise, for, when properly and clearly marked with the most pertinent information, they can save the manufacturer money and shipping time by cutting costly errors to a minimum.

Among the best judges of the well-marked case are the foremen and shipping clerks in the company warehouses and wholesale drug firms, for here is done the all-important job of receiving the cases, storing them, and filling orders for the 55,000 drug stores and 6,800 hospitals in the United States. Each of the larger wholesale drug houses handles from 6,000 to 10,000 items, or individual lines of products, in a single day, and from 120,000 to 200,000 items in a four-week period.

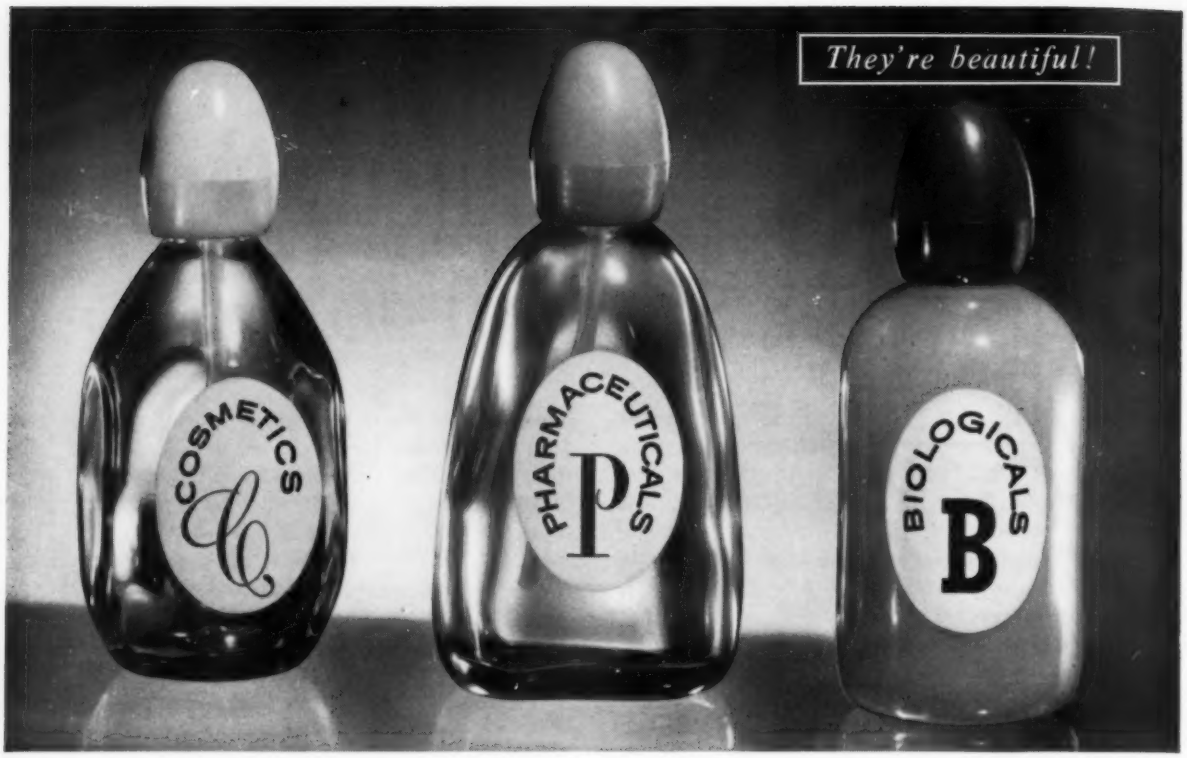
Although these numbers do not refer exclusively to shipping cases, but rather to product lines, they nevertheless suggest that the wholesale houses come in frequent contact with the containers and are well versed in their merits and deficiencies. They will tell their grievances with little prompting, as did one wholesaler who pointed to a package containing a deal in baby pants. On the outside of the case was the inscription, "Baby Pants Offer #——." It failed to say how many deals were inside. The wholesale house originally assumed the manufacturer had packed one deal to a case and filled orders accordingly. A short time later the office received a letter from a customer thanking the wholesaler for its generosity in sending six deals when he ordered only one.

Another deal was marked, "274 offer," along with its name. One item was given free with 11. The wholesaler sent out one unopened case whenever a single deal was requested and billed the customer for one dozen items—but the case actually contained four dozen.

Now, this wholesaler instructs its shipping clerks to open each case containing a deal, whenever that case fails to tell how many are inside. This takes extra time and means repackaging.

Another company sent 17 original cases of merchandise to a wholesaler (an original case is a container which has not been used before and which has the name of one particular product printed on the outside) and through careless packaging, pasted tape over the name of the item. Each of the 17 cases had to be opened, since the removal of the tape obliterated the product name, and the contents had to be counted and tabulated. More time lost.

A cosmetic firm sent four cases, containing 48 pieces in all, of different types of talcum. There was a code number on the outside, but the significance of this number was known only to the manufacturer and meant nothing to the wholesaler who had to open the packages and sort the 48 pieces into the different odors, counting each classification. *(Continued on page 187)*



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SHIPPING CASES PUT TO WORK *(Continued)*

A variation of this occurred when a manufacturer inscribed initials on the case, an abbreviation of the product name, which were meaningless to any one not acquainted with the item. These cases, too, had to be opened.

One wholesaler singled out an order of 15 gross (180 dozen). The contents of this shipment were packed in several almost identical cases, not one of which carried any significant markings. Each case had to be opened and the contents counted. More wasted time.

The larger pharmaceutical and cosmetic manufacturers have original cases printed ahead of time for their standard items, like tooth paste, bandages, or milk of magnesia, and use these cases only for the respective products. It is understandable that smaller firms, which do not have as large a stock turnover, cannot maintain such a complete line of original cases. Many of these firms cross out product names on original cases and use the containers for other items, so that an original tooth paste case, for example, may contain mouthwash. This is all right, provided the tooth paste label is completely covered up and the mouthwash inscription substituted. All too frequently, however, manufacturers forget, or neglect, to change the label, with the result that a case might have cologne written on it, but actually contain a deodorant or some other entirely different products.

Problems often arise with "repack" cases. These repacks contain miscellaneous items, because no one product is numerous enough to be packed by itself. It is necessary, and standard procedure, for the wholesaler to open each of these cases and store the enclosed merchandise on its open shelves for piecemeal filling of small orders. In one instance, a manufacturer used an original case (with a product marking on the outside) as a repack and failed to mark it accordingly. The case was then misplaced in the wholesale house and stored as an original container.

The reverse of this situation recently occurred when a cosmetic house packed four dozen bottles of toilet water, all the same odor and size, in several assorted cases, along with other cosmetic items. Had the manufacturer segregated the toilet water and packed it in a single shipping case marked four dozen on the outside, he would have saved the wholesaler the time it spent in digging the bottles out and counting them.

One manufacturer had the curious habit of printing the number of items within each particular case on the bottom in very small letters. Since they were stored and piled upright, the cases had to be pulled out of position and turned on their sides in order to read the "2 Doz."

Another company shipped its products in five-ounce and 12-ounce sizes, each size packed in a separate case, but with no sizes written on the outside. What's more, the different cases were very similar and so difficult to distinguish from one another that they all had to be opened and the contents counted.

COURTESY MERCK & CO., INC.

Some pharmaceutical houses paste the same labels on the outside of their cases which they affix to the individual bottles of capsules, tablets or liquids. While the name is perfectly legible on the bottle when it sits in a medicine cabinet, the same 2x3-inch, or smaller, label is most difficult to read in a storage area. A long-named product, especially, is extremely difficult to read because the letters are cramped, and the words hard to distinguish from those appearing on other company labels of similar products.

Some companies create confusion by avoiding the word, "Dozen," preferring the complicated nomenclature of 1x6 tubes (½ Doz.), 4x6 cans (2 Doz.), or the very confusing 2x12x2 bottles which means two dozen combinations of two bottles each.

This is a brief sampling of the errors in case markings which continually appear in the shipping departments of this industry and could be avoided if the manufacturers would heed a few basic rules.

Labels, to be efficient and legible, should be placed on at least one end of each case and should contain five types of information: 1. the name of the product (baby soap, facial tissue, cough syrup), 2. the quantity enclosed (2 doz., 4 doz. in 4 counter units, 1 only), 3. the size of each unit (small, med., large; 4 ounces, 8 ounces; 100 tablets; 1,000 capsules), 4. the manufacturer's name and address; and 5. the destination of the package. Of course, there are variations—when a deal is enclosed, the number of deals within that case should be written on the outside.

(Continued on page 257)

Handy idea..

It's a wise move to put a few standard drug items in with the luggage . . . never can tell when they will be needed to keep the vacation going smoothly. And folks who know the Purex label will tell you that Purex drug products afford complete satisfaction.*

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INTRA-COMPANY COMPETITION

Intra-company competition may not be completely new in this industry but it has recently been growing to such proportions that it presents serious new problems. This is particularly true in the competition between smaller, weaker companies and the big powerful multiple enterprises.

Intra-company competition has long been a factor in some other industries. For instance, in the automobile industry the several brands of General Motors cars, each with a wide range of sizes and prices that almost overlap, have been a big factor in giving dominance of the industry to this one company. In the automobile industry the big three are in fact the big twenty-one or whatever the number of car brands may be. It is characteristic of the sales operations of these companies for each division to fight as vigorously with one another as they fight outsiders.

Cosmetic and pharmaceutical manufacturers have not so much developed intra-company competition as a method leading to dominance in the industry as they have for other more direct and more recent reasons.

For instance, there can be little doubt that our present era of research and so-called miracle discoveries is having a profound effect on marketing. For one thing, the public has an eager and naive belief that any research development either makes obsolete everything that went before or at the very least is substantially superior to the preceding products. Also because of this popular belief in research, the public is in a constant mood of experimentation and has no particular feeling for brand loyalty. There is almost a public willingness to accept the belief that anything much older than yesterday is behind the times.

Recognition of this public attitude was recently expressed in a talk by Kenneth Laird, Executive Vice President of Tatham-Laird, Inc.

According to Mr. Laird, the reason great and successful consumer products are in greater jeopardy today than ever before is that consumer psychology now welcomes new products whereas earlier the consumer resisted change.

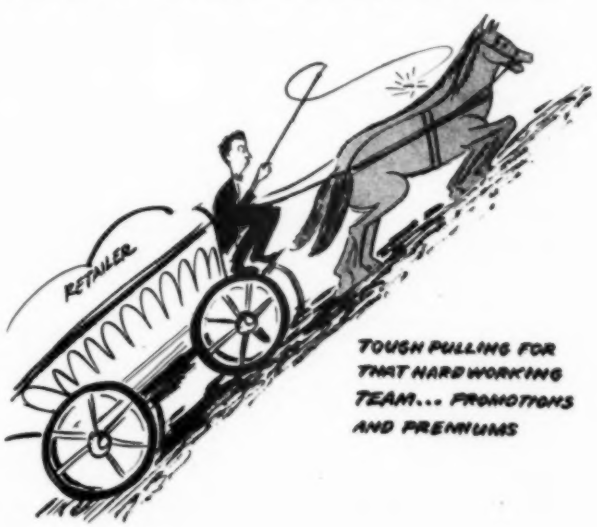
"This attitude, of course, protected and buttressed the established brand. If you were Colgate, sitting on top of Ribbon Dental Creme, you could rest confident that it would take an upstart many years and many millions to dislodge you. A leading brand was a walled city that could be breached only at great cost."

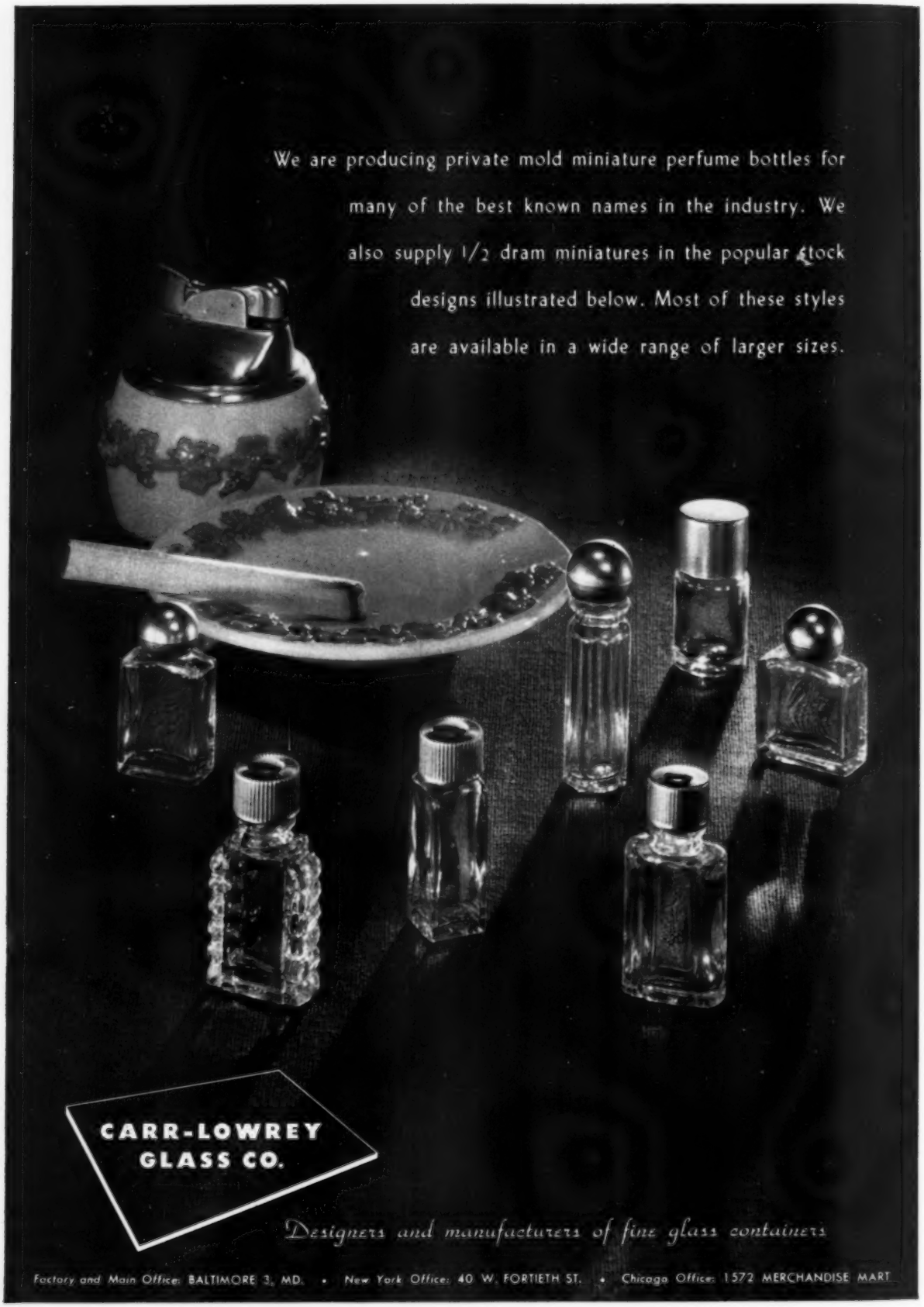
"By contrast, today—if you were a maker of toiletries, with a genuine, dramatic product improvement in the dentifrice field, and a starting advertising appropriation of $2,500,000—you could put a dent in the Colgate Dental Creme business as big as the Grand Canyon and you could do it with little or no out of pocket cost by the end of a full year."

"Nobody knows that better than Colgate, which was pretty severely buffeted first by ammonium and then by chlorophyll, and now is reputed to have decided to abandon Ribbon Dental Creme entirely (one of the great all time money-makers in the drug trade). They have already launched a new anti-enzyme formula. The Colgate management have evidently decided that if they are going to take a licking, that is on Colgate Ribbon Dental Creme, they might as well be licked by something with a Colgate label on it."

Research and technical development, not only in formulation but also in packaging and probably also in marketing formulas, are the big upsetting factors of today.

Not-too-oldtimers in this industry may remember the battle which Bristol Meyers started between the collapsible tube and the jar, for Ingram's Creme, shortly after they purchased that product. This battle which caused quite a bit of interest and amusement at the time, was intended to determine consumer preference for one or the other packages. It could have been continued as self-competition and might on that basis have more substantially entrenched this particular product.




We are producing private mold miniature perfume bottles for many of the best known names in the industry. We also supply 1/2 dram miniatures in the popular stock designs illustrated below. Most of these styles are available in a wide range of larger sizes.
CARR-LOWREY GLASS CO.
Designers and manufacturers of fine glass containers
Factory and Main Office: BALTIMORE 3, MD. • New York Office: 40 W. FORTIETH ST. • Chicago Office: 1572 MERCHANDISE MART

The people making hand creams and the people making deodorants and people making shampoos are introducing today self-competition, both as a protection against product or package innovation and also as a means of retaining the clearly-defined division of markets which are developing because of the different forms in which these products are presented.

But for the time being, it is certainly in the tooth paste business where the old entrenched stalwarts have had the real pushing around and where they have discovered that the many million dollars invested in advertising to secure a consumer franchise or consumer recognition or anything else that advertising may develop in the public mind is no protection for their brand against product or package innovation. More than most other people, tooth paste makers can testify that when something new comes in something old goes out the window.

Bristol Meyers, who have been operating on a sort of a clinched-teeth basis during the last several years, have finally decided on intra-company competition as a means of maintaining their position in the tooth paste business. In a new sales reorganization for Ipana, each dentifrice product that is, Ipana and Ipana A/C have their own sales managers who in Bristol Meyers organization terminology are called product managers. Although neither of these two men work exclusively on the one single product, they are each the responsible sales executives for the position of each of these two dentifrice brands.

According to this theory of Bristol Meyers of a tense combativite attitude toward another parallel brand of their own is that if they can make their advertising and their merchandising strong enough so that the public will want to buy one brand in preference to the other Bristol Meyers brand, then the probability is they will buy it in preference to all other brands.

It seems to be the situation today that any company with an entrenched brand which has a substantial following, when faced with some new development attracting wide consumer interest, is no longer faced with the dilemma of either trying to fight out the situation with a product no longer moving with the tide or to face the heavy risk of altering and changing this product which for many years has had consumer usage and approval. The new theory seems to be to retain the old brand and to fight to retain all that is possible for this old brand but also to meet the incoming tide with a new brand as a measure of insurance in case this should be the product of the future.

What this is going to add to the nearly overwhelming multiplicity of duplicating brands now weighing down so heavily on retailing inventories remains for the future to determine.

It's Still Research

According to a report in an advertising magazine, a letter from the Wm. Wrigley, Jr. Company was signed by an executive who called himself "Research Agitant." This title is said to have been created by Philip K. Wrigley, President of the famous chewing gum company as an improvement on the title "Director of Research." Mr. Wrigley is quoted as saying that no man could possibly be an expert in every branch of the very wide field that their research covers. The title of Director of Research pre-supposes that there could be such a man. On the other hand, Research Agitant means, according to Webster, "One active in furthering a course of action, "which Mr. Wrigley believes is the best title to describe what a modern research director is supposed to do.

Of course, we only have a little company here and our research doesn't cover so many involved directions. For this reason, we are from now on calling our Research Director "The Serendipidist."

Things Must Change

Nobody has ever quite figured out just how important obsolescence is in the formula of our prosperity. We know that a continually dynamic, competitive situation has applied to products, packages, advertising, promotions. Almost everything in business is continually revitalizing competition, stimulating consumption and building up our prosperity.

We like the quote in the "Road Ahead" issued by Hirshon-Garfield, Inc. advertising. "If you can't change the product—change the package—or the advertising appeal—but change *something* at regular intervals."

Other Half Don't Care

When shoppers fail to find the item they want on supermarket shelves, eleven out of twenty walk out without buying an alternate and one out of twenty loses all interest. These facts were released in a report yesterday by Selling Research, Inc.

Versatile Hair Nets

According to a recent release from Toronto, Canadian girls buy ten million hair nets each year. This must mean approximately five hair nets per capita. According to Miss Wilson, a Vice President of a Toronto firm that imports nets from China for the Canadian market, hair nets are put to all sorts of extraordinary extra uses. An ardent naturalist buys hair nets by the dozen to wrap suet in them for bird feeding.

A housewife uses a hair net to stretch across the fish bowl so the fish can't jump out.

Miss Wilson said that she has had some highly secret inquiries from men regarding hair nets. "They are used by bachelors in the dead of night to keep the hair slicked down."

Chain Directory

The National Association of Chain Drug Stores have just published the 1954 Edition, Directory of Chain Drug Stores.

This well printed, well-arranged volume carries an alphabetical listing of drug chains, a geographical listing of chain headquarters including the telephone number and list of executives and buyers and the number of stores operated, as well as a geographical listing of individual stores addresses.

The N.A.C.D.S. is located at 4 Park Avenue, New York 16, N. Y.

Streamlining Distribution

Food wholesalers are setting a harder, tougher pace in business operations which may alter the status of wholesaling in general.

Rather than a supply depot for retailers, wholesale grocery operations are now based upon "buying to sell." This was the concensus of opinion among wholesale grocers at the Mid-year meeting of the National American Wholesale Grocers Association.

The turnover rate in wholesale grocery distribution is rapidly accelerating as the operations of purchasing and sales department become more closely co-ordinated. "Everything is now bought 'with a plan for selling' " and merchandising operation rather than on a warehousing and servicing operation for retailers. If this new functional philosophy of wholesaling develops, it could bring bad news to small companies, to the introduction of new products unless backed by huge capital and in fact to any product not backed by large resources for promotion and advertising."

With a super-market conception of turnover and unit control, on a self-service basis for the retailer, and with the wholesaler operating entirely on a quick turnover sales basis, it looks like a streamlining of food distribution that may bring new economies in the cost of distribution of food. But then, judging by developments of the last twenty years, maybe it won't bring anything that the consumer can detect.

Nature Really Is Wonderful

Out in Oregon, an entomologist has been feeding alcohol to bees.

Apparently, bees don't like to pollinate alfalfa because when a bee "trips" the alfalfa plant, the stamens of the flower come down and smack him right on the nose.

Crop failures of this kind may now be a thing of the past. In a triumph of science the alcoholic bees wade right in with complete disdain from any jabs or punches that may come from stamens, pistils, petals or corollas or any other hazards in a bee's life. Is this another miracle of chemistry?

Profits from False Advertising

There is a new kind of practitioner coming into prominence in the advertising business. These are the tongue-in-cheek boys who believe that it is supremely clever to beat the Federal Trade Commission on an advertising claim. These clever boys have developed this game to a science, or perhaps we should call it a fine art, where they can estimate within a hair's breadth how far they can go with deliberately misleading statements and how long it would take before they are cited. These men believe that if they can get an advertising leeway of two or three months with a false statement, they can register this sufficiently in the minds of the consumer and so pass on to something else. When finally picked up by the FTC, these men put up no fight at all. With wide-eyed innocence, they meekly sign a stipulation to cease and desist printing the misleading advertising statement.

This practice is getting so prevalent that it will have to be faced some day if we are to have truth in advertising and if malicious and destructive competition is to be prevented from growing wider.

At present, there is no penalty for being caught in the act with a misleading statement. We don't suppose these actors would be quite so ready for their repeated three months' sorties into the reams of misleading advertising fiction if, on signing a stipulation, they could be compelled to print a statement in every publication where their advertising appeared or a statement in any advertising media they used, which would become a standard official form saying, in effect, "We have just signed a stipulation with the United States Government admitting that our advertising containing the statement quote, 'is false and misleading.' "

List of Taxables

"Federal Retailers Excise Tax" is the title of a new booklet just issued by the National Association of Chain Drug Stores. This booklet lists alphabetically the products normally carried by drug stores which are taxable and those which are non-taxable.

Color Tels and Packages

Some national advertisers are perturbed over the coming effect of color television on their package.

There is no question but that color television is destined to become a major potent force in advertising and product display. It will undoubtedly also bring some problems in package design.

According to a recent issue of Grey Matter, published by Grey Advertising Agency, the thing to do is not design your package *expressly* for color TV. Says Grey, "It is not *necessary*—it will be seldom *advisable*."

Grey believes and this department goes all the way in agreement, that when a choice must be made in meeting package problems, as may happen here, point-of-sale is the place to put the emphasis.

One place which the packaging experts pass by without even a side glance is on color-blind people. These folks, according to an executive of Sun Chemical, are mostly only red and green blind. Blue and yellow registers as colors. We wonder how many color-blind people are also shoppers.

Just Like That

If you ever have an urge to step out and purchase a bottle of perfume that will cost you $10,000.00, this can now be done at Bonwit Teller in New York.

Count Dorelis, a newcomer to the perfume industry, used a half-page in the Sunday New York Times to announce Royal Gem, in a bottle "magnificently studded with fourteen carats of diamonds inset in handworked fourteen carat gold filigree."

Textiles and Skintone

A leading textile company has just come up with a theory that women don't know their own skintone. Burlington Mills Corporation, which believes that they have an interest in things of this sort because they sell

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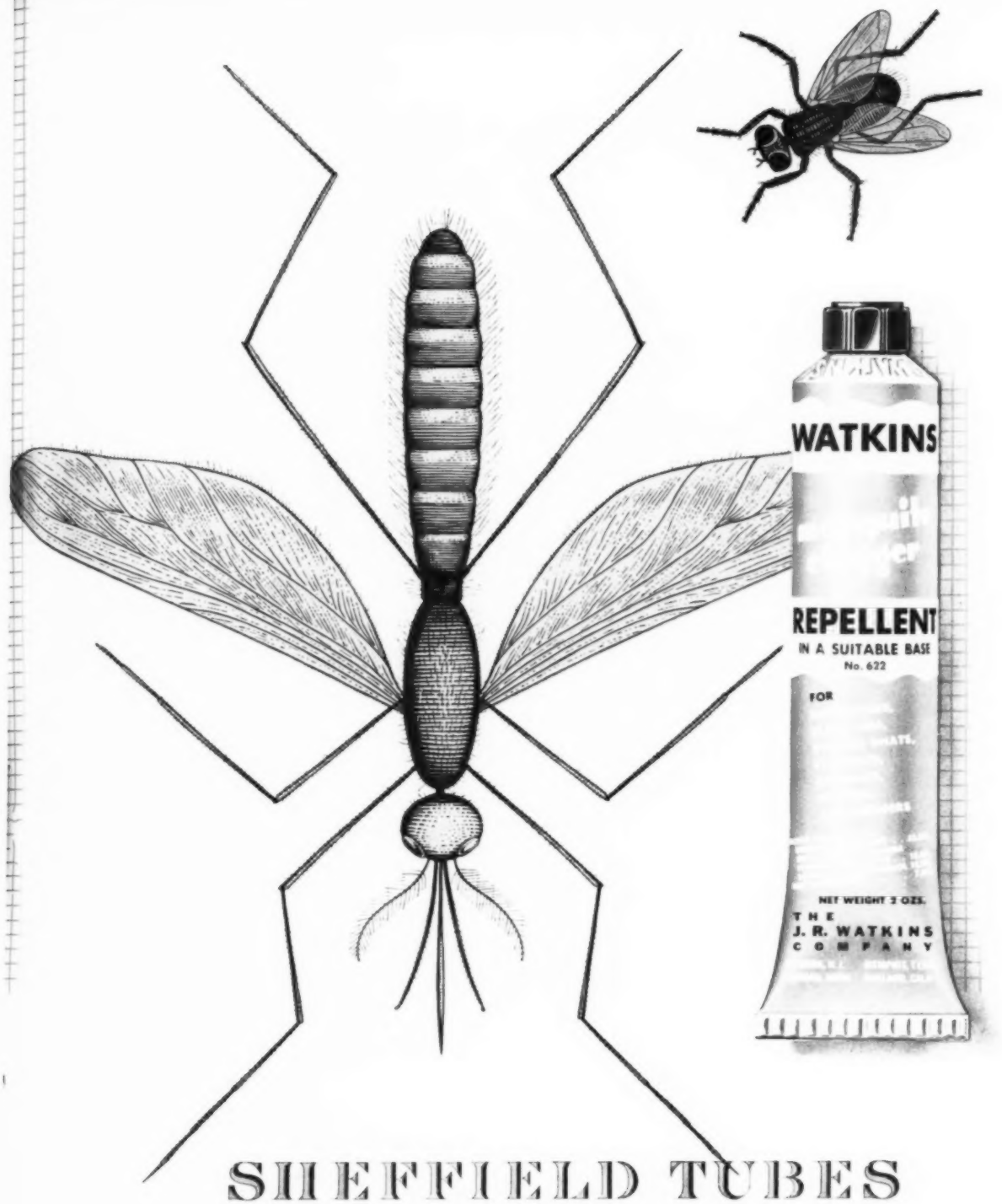


SHEFFIELD TUBES

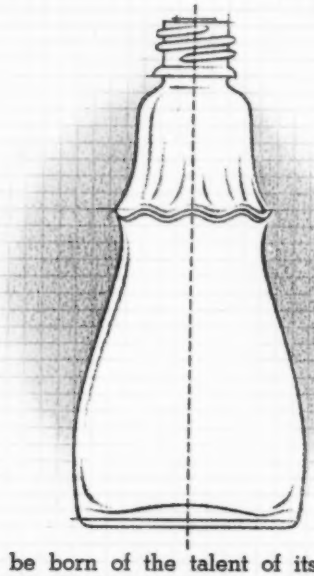
first choice of the famous J. R. WATKINS CO.

Man's war on insect pests is virtually eternal... but it's adios to mosquitoes and jiggers to chiggers when Watkins' effective insect-repellent takes over! *Sheffield Process* collapsible tubes have been Watkins' choice for plus packaging of this item as well as Watkins' Lather and Brushless Shaving Creams, and Watkins' Toothpaste. Sheffield's association with this famous American company began before the turn of the century and has extended through wars, depressions, and good times alike. It suggests the wisdom of procuring collapsible tubes from Sheffield, where service is not merely a slogan but is based on expert counsel, quick action, and detailed follow-through. For superior tubes and tube-manufacturing know-how from A to Z, try Sheffield Tube on *your* next order.

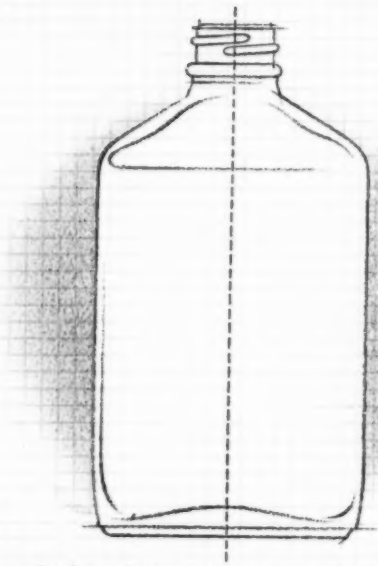
CORPORATION

Factory and Home Office: New London, Connecticut • Sales Offices: New York · Chicago · Los Angeles

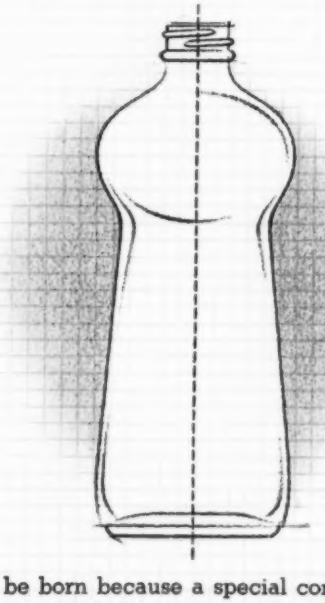
How is a glass Salespackage born?



It may be born of the talent of its designer to picture the virtues of a product by the grace and beauty of its container.



It may be born from necessary emphasis on the protection of its contents from every outside influence.



It may be born because a special convenience to the user is needed to insure satisfactory performance under difficult circumstances.

That successful glass SALESpackages are so consistently developed by Owens-Illinois is no accident.

It is the result of systematic research into the problems to be solved and the objectives to be reached in the creation of each Duraglas® SALESpackage by specialists in design, engineering and marketing.

The best answer to your packaging problem may come from a single factor in the birth of a new Duraglas Container but is more likely to evolve from a combination of many skills. Ask us to demonstrate how Owens-Illinois' abilities can be focused on your problem . . . container, closure, label design or carton.

DURAGLAS CONTAINERS
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

apparel fabrics, have been doing some research along this line.

According to Burlington, variations of blue are the most popular colors in the country and browns are the most disliked. There is also a distinct skintone variation by area, ranging from the more medium and ivory tones in the South to pink tones in the North and Olive and "radiant" hues in the West.

Institutional Advertising

At the annual meeting of Socony-Vacuum Oil Company, the chairman of the Board of Directors said "What people think of a corporation has a lot to do with its success or failure in making money." That looks to us like a strong endorsement of institutional advertising which, in the last few years, has been coming into more and more disfavor.

Growing Pharmacy

A favorite subject of this department has always been examples showing the potent growth opportunities in this industry. We have commented many times before on the growth potential of pharmaceutical manufacturers in plant and animal health and in nutrition.

Now we are glad to note a report from the University of Southern California that penicillin and streptomycin can be effectively used by the brewing industry to make better beer.

Growing Electric Shave

According to recent reports, the three biggest electric shave makers, that is Schick, Remington, Sunbeam, claim 34 per cent of the sixty million shavers as compared to 28 per cent two years ago and less than 15 per cent in 1940. These companies believe that three out of five junior shavers use electric models, as compared to one out of four a decade ago.

Almost Tut, Tut

Our Secretary of Agriculture, Ezra T. Benson, complained in a recent speech that women spend more for beauty aids than they do for milk. Hastily catching himself, he said further: "Now please understand, I am all for beauty. I just happened to believe that a pint of milk a day is itself a mighty fundamental aid."

Wonderful Discontent!

Human discontent can be a great stimulus to expanding business. No country in the world has used discontent so successfully as the foundation of its prosperity as has the United States. Without a carefully fostered and planned rapid obsolence quite a few of our major industries would probably be in a state of collapse.

The miracle of chemistry, electronics and other inventions of the past decade have functioned chiefly in providing a continual succession of new products and product improvements which have bred discontent for established products and kept consumer buying to a high level.

While packaging has been a practical evolution based on economic factors it has also through design, methods of application and in other ways provided a constantly recurring source of discontent with previously packaged products.

The age we are entering now in this country will probably be a period of the greatest discontent with consumer goods ever seen in the history of the world. When all of the package and industrial designers get through with their job, when the chemists and the engineers finish with their constant discoveries and innovations, and when the packaging people finish with their unbounded enthusiasm for innovation it looks as if nobody in America will ever be satisfied with anything they buy long enough to use it up.

We would not despair about this. On the record it is the chief key to our prosperity.

Preferred Display

Here's the way three big Eastern food chains rate merchandising displays. In order of preference, they rank store posters first, related item display materials second and display bins third. In a survey of 500 stores of these chains it was brought out that the manufacturer must know his customer because each of these chains had different specifications of what it considers "satisfactory."

Where Cosmetics Are Bought

The place where Cosmetics are purchased is continuing the trend apparently started about ten years ago. Of these six main avenues of distribution, three show a decline in traffic in the cosmetic department and three an increase, in a recent survey of the Seattle Times. The place where cosmetics are purchased and the percentage of purchase are as follows:

	1954	1949	1948
Department Store	30.8	34.9	32.3
Chain Drug	25.2	22.7	24.6
Independent Drug	23.8	24.8	26.2
Grocery Stores	10.6	3.7	4.1
5 and 10c variety stores	7.4	8.4	8.1
House to house sales person	5.6	4.7	3.0

Grocery Store Toiletries

Here's the way leading grocery stores, that is, the independent A & B stores in three cities handle toilet articles, according to a recent survey of the three Bee newspapers (McClatchy Newspapers Consumer Analysis):

	Sacramento	Fresno	Modesto
Tooth Paste	95 per cent	86 per cent	100 per cent
Liquid Shampoo	82	78	100
Cream Shampoo	87	73	100
Deodorant	76	65	100
Permanent Wave	74	65	89

MANY Styles AND Sizes

...THERE'S AN ANCHOR CAP FOR EVERY SEALING PURPOSE

ANCHOR HOCKING makes eight stlyes of metal and molded, screw and lug caps for medicinal and health products, toiletries, cosmetics and household chemicals. Each is designed for specific sealing purposes—all provide dependable, economical, attractive and efficient seals.

The uniformly high quality of Anchor Caps is the result of practical research and engineering, careful selection, testing and control of raw materials, high manufacturing standards and thorough quality control through laboratory tests and regular inspections.

If you package or contemplate packaging in glass let us recommend and send samples of the closures best suited to your particular needs. The services of our Package Engineering and Research Laboratories are also available to help you solve glass packaging problems.

Anchor® Molded Caps are available in 9 sizes—15 to 38 mm., in black, brown and other colors. In application, cap thread contacts underside of glass thread, draws liner down tightly over entire 360° of container finish. Liners held captive in cap recess by a retaining ledge.

ANCHOR HOCKING

GLASS CORPORATION
LANCASTER, OHIO

★

The Most Famous Name in Glass

Package Doin's . . .

New Lipstick Case

Calumet Manufacturing Co., Inc. has designed a new swivel lipstick case, and, by eliminating two metal parts, has reduced the cost. It is available in two sizes, 0.477 and 0.500 cups each with a brass finish.

Prell Package

Procter & Gamble Co. has packaged its Prell shampoo in a family of new

Foiline cartons made by Robert Gair Co. The opalescent green of the Foiline is similar to the color of the product. The carton is printed in five colors.

Plastic Compact

Calumet has also developed an easy-open pushbutton plastic compact in standard size and in all colors. The compact has an inside mirror and a smoothly operating metal hinge.

Old Spice Redesigned

Shulton, Inc. has redesigned its Early American Old Spice line but has retained the motif theme. The first packages to be readied in time for Christmas gifts are toilet water, dusting powder and combination gift package. They are cartoned in charcoal-grey and soft blue,

with white and gold sprays and figurines in light blue and red giving a hand-painted effect.

The panel molded glass bottle for the toilet water has an inverted screw cap of soft blue.

New Type of Dispenser

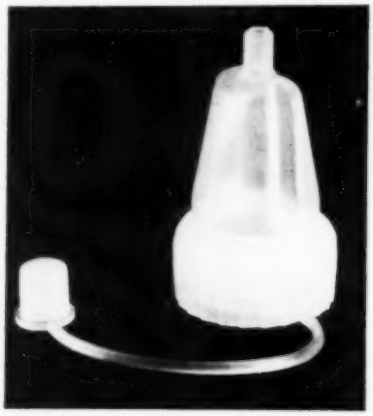
Berman Bros. Inc. has developed a polyethylene dispenser closure to be used primarily on glass bottles. It is designed so that a squeeze action produces a bellows effect within the closure. The small protective cap, for covering the tube, is attached to the closure by a strong thread of polyethylene to prevent its being lost during use.

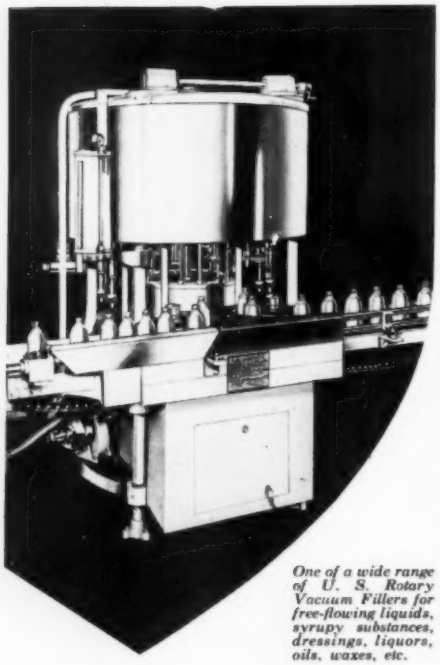
New Display Container

National Healthaids, Inc., producer of Sul-Ray Soap, has developed an all-new wrapper and display container which holds one dozen bars. The display measures 3 1/8" x 7 7/8" x 3 1/8" closed, and opens to 8½" high.

Matchabelli's Cologne Cruise

Prince Matchabelli has packaged four new colognes in an intriguing manner. The complete line of colognes is called, "Cologne Cruise," which each one named for a romantic port-of-call in the Mediterranean—Tangier, Valencia, Cannes and Napoli. Each bottle fit into its own carton and is decorated to portray the spirit of the native dance associated with its name. The cartons are joined together, accordion-fashion, and fold together to form a trunk, complete with strap, real-looking fixtures, stickers and tag. A ticket inside the trunk gives fragrance directions to the Cologne Cruise ports-of-call.





One of a wide range of U. S. Rotary Vacuum Fillers for free-flowing liquids, syrupy substances, dressings, liquors, oils, waxes, etc.

Leave Your Liquid Filling Problem to a Specialist...

Your production line requirements may be a problem to you but they are a-b-c to our staff of liquid filling specialists.

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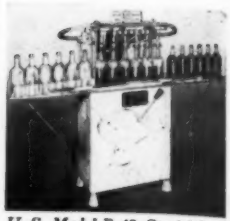
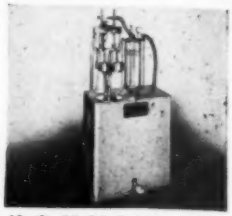
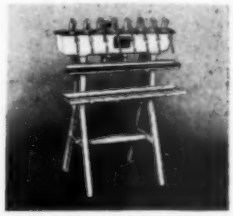
For quotations, state nature of product, containers used and production line capacity. "Rotary Filler Bulletin" describing basic mechanisms mailed upon request.



U. S. Model B-49, Straightline Vacuum Filler. Adjustable for all types of containers.



U. S. Model B-2 Semi-Automatic Vacuum Filler. Fast, portable. Filling is continuous.



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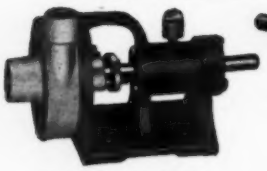

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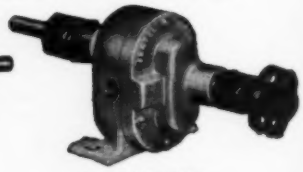
CENTRIFUGAL



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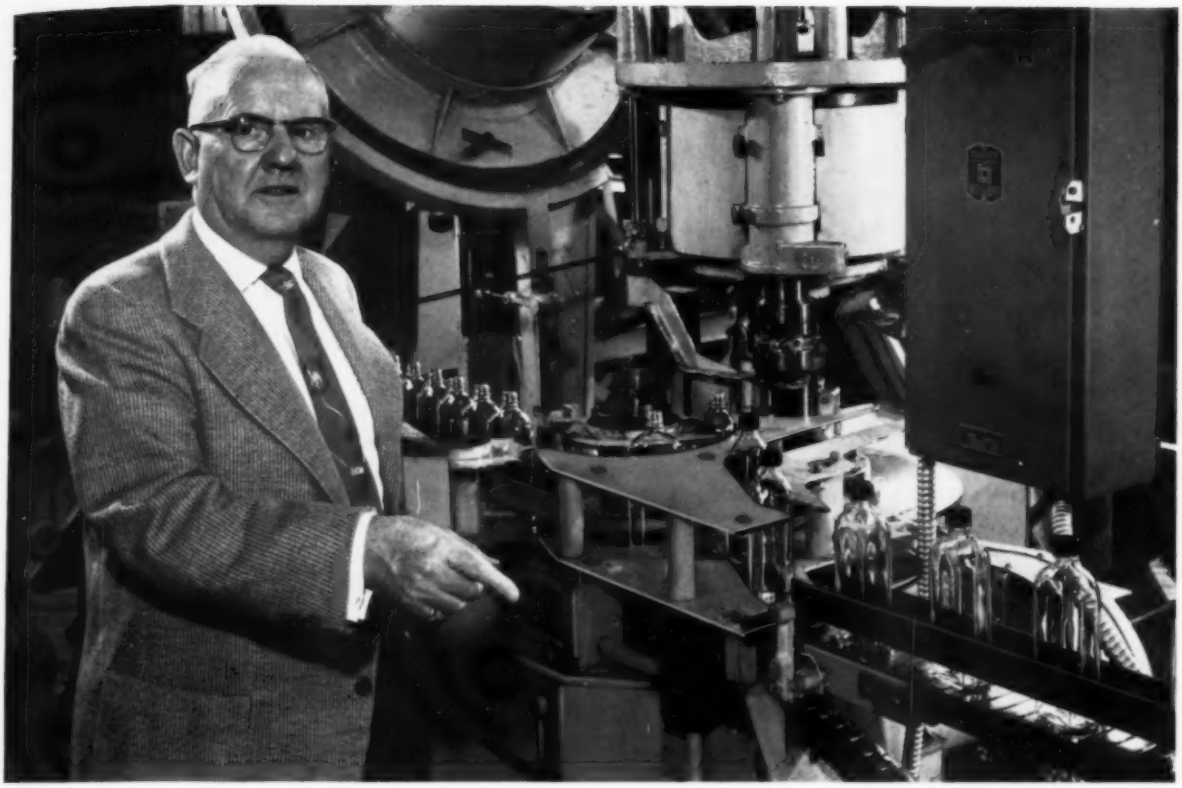

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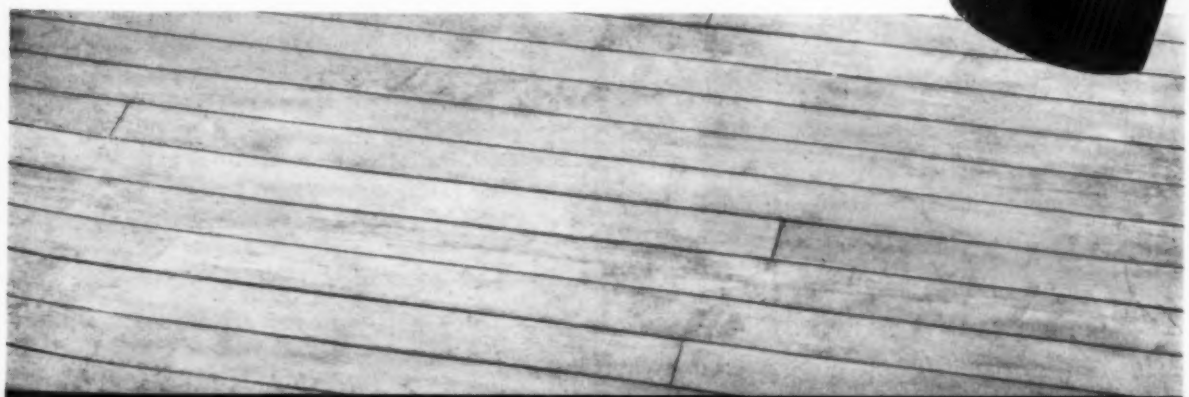

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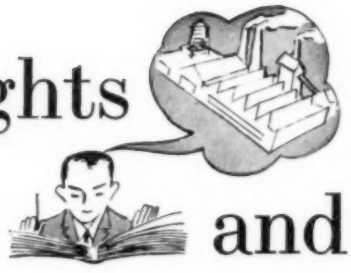
Patent Thoughts  and Trends

*by Thomas Cifelli, Jr.**
PATENT ATTORNEY

Potpourri

This title came to mind when it was realized that this issue will be distributed during the inevitable dog days of August and it is likely that most of the readers will feel that they are in a "stew." Consequently, rather than confine attention to two or three matters it was thought that if a large number of different items were treated here there might be a slight chance that some reader might pause long enough to scan a few of the items.

The foregoing explanation of how the title came to be applied is believed necessary. Otherwise the book-worm in our midst might incorrectly assume that the title was meant to imply that this is a literary production composed of parts brought together without a bond of connection, which is the dictionary meaning of the term. While it must be admitted, as the reader will soon see for himself, that this article is composed of totally unrelated parts, anyone familiar with previous articles which have appeared will certainly know that whatever else they might be called, the term "literary production" is not apt.

Nevertheless, the different items to be treated do fall under three general groupings: Trade Marks, Summaries of Some Recent Patents, and Government Patent Fees. Then, of course, there is the usual table of recent patents appearing at the end of the article.

Descriptive Trade Marks

As anyone who has ever attempted to obtain any kind of legal federal protection on trade marks well knows, it is not desirable to have a mark which is descriptive of the goods to which the mark is attached. While it is true that a descriptive trade mark can be protected, if it has acquired a secondary meaning, that is to say, its use is so

TRADE MARK	GOODS	CITATION
Cube Steak	meat tenderizing machine	Spang v. Watson (C. A. D. C. 1953) 205 F. 2d 703, 97 USPQ 290.
Lauderette	washing machine	Bascom Launder Corp. v. Telicoin Corp. (C. A. 2, 1952) 204 F 2d 331, 97 USPQ 186.
3 in 1	jig saw	Burgess Vibocrafters v. Atkins Industries (C. A. 7, 1953) 204 F 2d 311, 97 USPQ 366
Ez Flo	insecticide dusts, plant and horticultural parasiticides, agricultural crop and animal fungicides and plant hormones	Application of Diamond Fertilizer Co. (C. C. P. A. 1953) 203, F. 2d 767, 97 USPQ 333.
Fastie	Tube fastening machine	Application of Hercules Fasteners (C. C. P. A. 1953) 203 F 2d, 753, 97 USPQ 355.
Carillonics Bells	electrically operated carillons or chimes	Schulmerich Electronics Inc. v. J. C. Deagan, Inc. (C. C. P. A. 1953) 202 F. 2d 772, 97 USPQ 141.
Mineral Meal Minral Meal	hog and livestock feed	Sargeant & Co. v. Welco Feed Mfg. Co. (C. A. 8, 1952), 195 F. 2d 929, 93 USPQ 144.
Lanolin Plus	soap and cosmetics	Lanolin Plus Cosmetics Inc. v. Marzall (C. A. D. C. 1952) 196 F. 2d 591, 93 USPQ 126.
Storybook Goldilocks Little Bo Peep June Girl Mistress Mary Curly Locks Little Miss Muffet Red Riding Hood Little Miss Donnett Story	dressed dolls portraying such fictional characters	Nancy Ann Storybook Dolls v. Dollcraft Co. (C. A. 9, 1952) 197 F. 2d 293, 94 USPQ 290.
Pro-Tek-Tiv	shoes	Curtis-Stephens-Embry Co. v. Pro-Tek-Toe Skate Stop Co. (C. A. 8, 1952) 199 F. 2d 407, 95 USPQ 130. "Concededly descriptive."
Safe T Seal	envelopes	In re Alvah Bushnell Co. (C. A. D. C. 1919) 261 F. 1013.
Ashless Ash Stand	ash stands	Smokador Mfg. Co. v. Tubular Products Co. (C. A. 2, 1929), 31 F. 2d 255, 1 USPQ 158.
Specs	fowl masks or blinders	Cridlebaugh v. Rudolph (C. A. 3, 1943) 131 F. 2d 795, 55 USPQ 386.

*Newark, New Jersey

well known that the general public associates the mark with the goods of a particular supplier, it is much more difficult and costly to create effective trade mark rights in descriptive marks than is the case with non-descriptive or fanciful marks.

This general problem was involved in a recent Nebraska Federal Court action, wherein the Federal Court held that Dietene is descriptive of a reducing supplement, and that the owner of the registration of Dietene could not prevail against the user of the trade mark Dietrim also used in connection with a reducing supplement.

While the court did not have to do so in order to decide the case, it nevertheless went to considerable pains to collect a number of cases where trade marks have been held to be descriptive. Because this information is believed to be of general interest, a list of the trade marks, along with the goods to which the marks were applied and citations to the court opinions are included, beginning on page 199 and continuing to page 228.

Aryl and Aralkyl Derivatives of Dialkylaminoalkylureas

U. S. patent 2,681,929 discloses these compounds which are said to have a pronounced effect on the circulatory system and a diuretic effect on the excretory function of the kidney. The quaternary salts are said to act as sympathicolytics and parasympathicolytics and to produce ganglion block. One of the patented compounds is 1,1 - diphenyl - 3 - (β - dimethylaminoethyl) urea.

This patent was obtained on an invention of J. W. Cusic and assigned to G. D. Searle & Co.

Biologically Active Diphenylmethane Derivatives

Certain diphenylmethane derivatives are said to inhibit the action of hyaluronidase very materially. These derivatives are obtained by condensing with formaldehyde dihydroxy benzoic acids selected from the group consisting of 2.3-, 2.5-, 2.6-, 3.4- and 3.5-dihydroxy benzoic acid.

Inhibition of hyaluronidase is desired because this material promotes or facilitates the penetration of infective substances. The patent, U. S. 2,682,557 was obtained by Hahn, a Swedish inventor and Fekete, from Brazil, and assigned to Aktiebolaget Ferrosan, Sweden.

(Continued on page 228)

Trade mark	Goods	Citation
Therogene	cotton wadding	Thermogene Co. v. Thermozine Co. (C. A. 2, 1916), 234 F. 69.
Dumore	electric appliances	Wisconsin Electric Co. v. Dumore (C. A. 2, 1939) 35 F. 2d 555, 3 USPQ 232.
Steem Electric	electric steam irons	Steem Electric Corp. v. Herzfeld-Phillipson Co. (C. A. 7, 1940), 118 F. 2d 122, 48 USPQ 92.
Air Brush	instrument designed for the distribution of pigments	Air Brush Mfg. Co. v. Thayer (C. A. 7, 1897), 84 F. 640.
No Wash Up	preparation for use on printing rollers and lithographing plates to obviate the necessity of washing them after use	Auit & Wiborg Co. v. Cheshire (C. A. 8, 1909) 191 F. 741.
Elastic Seam Drawer	drawers haveing a strip of elastic knitted material inserted at the seams.	Scriven v. North (C. A. 4, 1903) 134 F. 366.
Rite	pens and pencils	Rite-Rite Mfg. Co. v. Rite Craft Co. (C. C. P. A. 1950) 181 F. 2d 226, 85 USPQ 268.
No-D'Ka	tooth paste	No-D-Ka Dentifrice Co. v. S. S. Kresge Co. (D. C. Mass. 1928), 24 F. 2d 726.
Lusta	soap	Lusta-Foame Co. v. Wm. Filene's Sons Co. (D. C. Mass. 1946) 66 F. Supp. 517, 70 USPQ 170.
Bufferin	aspirin	Wise v. Bristol Meyers Co. v. (D. C. N. Y. 1952) 107 F. Supp. 800, 94 USPQ 327.
M. M.	malted milk	Horlick's Malted Milk Co. v. Borden Co. (C. A. D. C. 1924) 295 F. 232.
Pep	beverage	Pepsi Cola Co. v. Krause Bottling Co. (C. A. 4, 1937) 92 F. 2d 272, 35 USPQ 106.
NuGrape	grape drink	National NuGrape Co. v. Guest (C. A. 3, 1948) 164 F. 2d 874, 75 USPQ 229.
Bohemian	beer	American Brewing Co. v. Bienville (C. A. 5, 1906) 153 F. 615.
Non-Stick	windows	N. S. W. Co. v. Wholesale Lumber & Millwork (C. A. 6, 1941) 123 F. 2d 38, 51 USPQ 241.
Keepclean	toothbrushes	Florence Mfg. Co. v. J. C. Dowd & Co. (C. A. 2, 1910) 178 F. 73.
Ruberoid	flexible waterproof roofing	Standard Paint Co. v. Trinidad Asphalt Mfg. Co., 220 U. S. 446.
Always Closed	revolving door	Van Kannel Revolving Door Co. v. American Revolving Door Co. (C. A. 7, 1914) 215 F. 582.
U-Bar	greenhouse construction	William H. Lutton Co. v. Lord & Burnham Co. (D. C. N. Y. 1927) 16 F. 2d 490; aff'd 19 F. 2d 1023.
Dioxygen	hydrogen dioxide	Oakland Chemical Co. v. Bookman (C. A. 2, 1927) 22 F. 2d 930.
Flora	flavorings	Florasynth Laboratories v. Goldberg (D. C. Ill. 1949) 86 F. Supp. 624, 81 USPQ 332.

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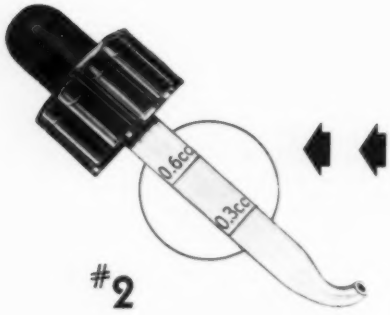

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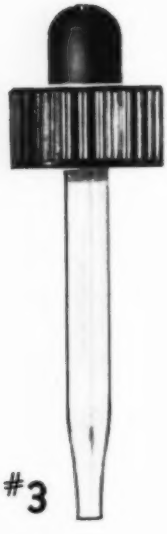

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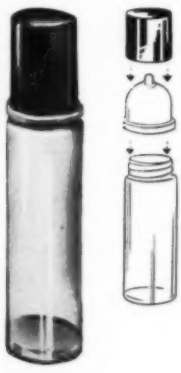

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NEWS...

Larrick Named Commissioner

George P. Larrick, Deputy Commissioner of Food and Drugs since June 1951, became Commissioner on August 1, succeeding Charles W. Crawford who retired as of July 31. Mr. Larrick is a career employee of the Food and Drug Administration, succeeding to the post of Commissioner in line with the policy of filling vacancies from the ranks—a policy that has been followed since the agency was first established under Commissioner Walter G. Campbell.

GEORGE P. LARRICK

Born in Springfield, Ohio, in November 1901, Mr. Larrick has more than thirty years service with the FDA, including twenty-five years in an administrative capacity. He first joined the FDA in 1923 as an inspector and served successively as administrative assistant from 1928 to 1930, as senior inspector from 1930 to 1939, as chief inspector from 1939 to 1945, and as assistant commissioner from 1945 to 1948, as associate commissioner from 1948 to 1951, and as deputy commissioner from 1948 until his appointment as commissioner.

Mr. Larrick attended Wittenberg College, Springfield, Ohio, and Ohio State University, and also George Washington University where he specialized in chemistry and biology. He is married and has three sons and a daughter.

Commissioner Crawford had more than thirty-seven years government service when he retired. He had served as an analyst in the FDA Chicago and New Orleans field stations prior to coming to Washington in 1917.

Silloway Named President

Charles T. Silloway has been named president of Warner-Chilcott Laboratories, according to Alfred E. Driscoll, president. Mr. Silloway, who was the executive vice-president of Chilcott Laboratories, became the vice-president of Warner Hudnut, in charge of the company's pharmaceutical operations, when it acquired Chilcott in 1952. Early in 1953 Chilcott Laboratories was merged with the William R. Warner Co., Warner-Hudnut's older pharmaceutical division, to form Warner-Chilcott Laboratories.

CHARLES T. SILLOWAY

Ciba Sales Expansion

Ciba Pharmaceutical Products, Inc. has greatly increased the number of its sales representatives, according to Vincent A. Burgher, vice-president in charge of sales. The company has formed a new southern division with headquarters in Atlanta; five new state districts, one each in Washington, D. C., Jacksonville, Minneapolis, Denver and Seattle; and has increased the supervisory force both in the Summit office and in the field.

Cecil R. Mozley has been named manager of the southern division, while the respective managers of the state districts are George H. Bull, E. G. Barton, Jr., Clayton F. LeVeque, Frank W. Zelewski and Birney R. Smith.

Howard W. Hackett has become manager of the Boston district, and Archie Armstrong, manager of the Atlanta district.

Goldstein Awarded Fellowship

Melvin Goldstein, research assistant to Dr. Victor G. Fourman, Syntomatic Corp., has been awarded a National Research Foundation Fellowship. He majored in Chemistry at Columbia University where he received his B.S. degree Summa Cum Laude.

Hultquist with Arapahoe

Martin E. Hultquist, formerly assistant director of pharmaceutical research, and later research associate, of American Cyanamid's research division, has accepted a similar position with Arapahoe Chemicals, Inc., in Boulder, Col.

Sullivan Promoted by Gair

Frank J. Sullivan has been appointed division manager of Robert Gair Co.'s Ohio corrugated box division. He had formerly been special sales representative for the container division at the New York office.

FRANK J. SULLIVAN

Named Arner Med. Director

Dr. Robert L. Brown has been appointed medical director of the Arner Co.,according to Dr. Niels C. Klendshoj, president. Formerly assistant medical director of Armour Laboratories, he will work closely with the president in handling client problems concerning clinical and medical research and product development. He will also serve as liaison with the Federal Food and Drug Administration on all company matters dealing with that agency.

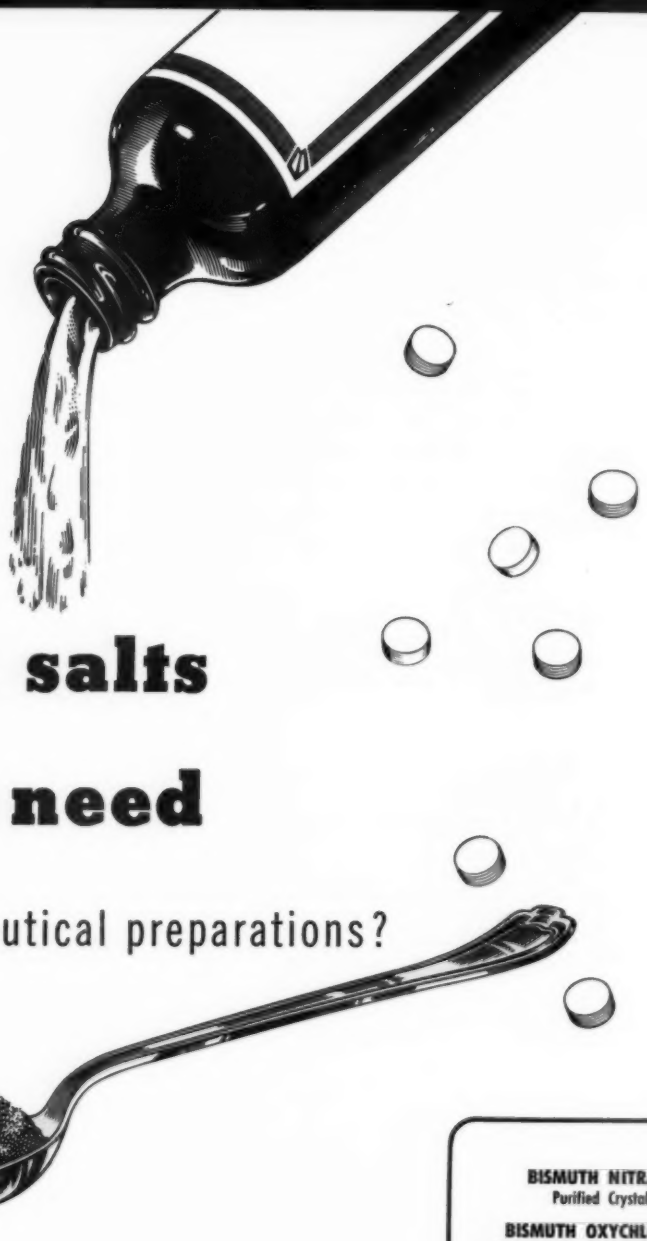
Hambley Promoted by P-D

Gordon B. Hambley has been appointed manager of Canadian sales operations, Parke, Davis & Co., succeeding J. Howard Stephenson who has retired, and will have the full responsibility for the company's sales operations in the Dominion of Canada.

With the firm more than 46 years, Mr. Stephenson started with Parke, Davis in 1908 in the Detroit accounting department and served in seven branches before becoming manager of Canadian affairs in 1945.

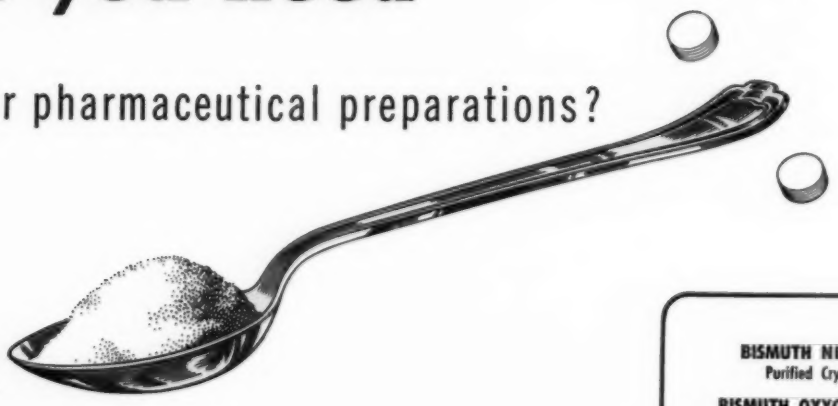
Reid Resigns, N.Y.Q.

Francis J. Reid has resigned as executive vice-president of the New York Quinine and Chemical Works, Inc.



What bismuth salts do you need

for your pharmaceutical preparations?



You name the exact type of Bismuth Compound you need and the chances are J. T. Baker Chemical Co. can supply it—for Baker is a specialist in the production of a wide variety of Bismuth Salts of high chemical purity and precise physical specifications.

This high quality is available in a number of Bismuth Compounds (see list on this page), made especially for use in tablets, capsules, powder mixtures, ointments, or liquid suspensions.

Bismuth Salts are made from specially selected bismuth metal, reacted under close control. This careful processing is important when these salts are used as ingredients, or used as a starting point for the synthesis of organic bismuth compounds.

Many leading drug and pharmaceutical houses value Baker fine chemical purity and uniformity as a safeguard to the quality of their own products. If you are a user of Bismuth Salts or other fine chemicals where "Purity by the Ton" is required, may we send you samples and prices? Let us know your requirements.

J. T. Baker Chemical Co., Executive Office, Phillipsburg, N. J.

BISMUTH NITRATE
Purified Crystal

BISMUTH OXYCHLORIDE
'Baker Analyzed' Reagent Powder

BISMUTH SUBCARBONATE
Purified Extra Light Powder

BISMUTH SUBCARBONATE
U.S.P. **Light** Powder

BISMUTH SUBCARBONATE
U.S.P. **Medium** Powder

BISMUTH SUBCARBONATE
U.S.P. **Heavy** Powder

BISMUTH SUBGALLATE
N.F. Powder

BISMUTH SUBNITRATE
N.F. Powder

BISMUTH SUBSALICYLATE
U.S.P. Powder

Baker CHEMICAL

Baker Chemicals

REAGENT • FINE • INDUSTRIAL

J. A. CLARK

J. A. FABER

Schimmel Boehm Established

Schimmel & Co., Inc. has formed an associate company in London, called Schimmel Boehm, Ltd., which has been set up in cooperation with Fredk. Boehm, Limited, of London. Boehm has for many years been the Schimmel agent for the United Kingdom.

The new company will offer the United Kingdom all the well-known Schimmel specialties in addition to the Boehm products, manufactured in the company's modern, well-equipped factory in Belvedere, Kent. The administrative offices will be at 19 Bentinck St., London W. 1, and sales activities will cover the United Kingdom, as well as other areas where it may be advantageous to transact business in sterling.

Schimmel Boehm will be under the personal direction of J. A. Clark who has been identified with both Schimmel and Boehm interests for some 30 years. He will be assisted by J. A. Faber.

Plant operations will be under the direction of W. S. Bearman.

Gert Keller, president of Schimmel & Co., Inc., will serve on the board of directors of the British firm and will supervise the coordination of the manufacturing and sales activities of the two companies.

With the original Schimmel Leipzig factory now a state enterprise behind the Iron Curtain, the center of Schimmel operations has logically shifted to the New York company and has been independently owned and operated since before the war.

Dr. K. T. Keller, former technical director of the parent house, joined the New York company a few years ago and is also taking an active part in the production program of the new company.

Holmquist Promoted by Lilly

Donald J. Holmquist has been promoted to director of the financial division of Eli Lilly International Corp.

Upjohn Librarian Honored

Alberta L. Brown, head librarian of the Upjohn Co., was honored at the 7th anniversary dinner of the Pharmaceutical Section of the Special Libraries Association during its annual convention in Cincinnati recently. Founder of the Section, she was presented a deluxe edition of the Pharmaceutical Section issue of Special Libraries Bulletin devoted to the achievements and accomplishments of the Section under her direction and guidance.

Miss Brown was also honored as retiring chairman of the Science - Technology division of the Special Libraries Association during 1953-1954.

Eaton Exec. Appointments

Dr. L. Eugene Daily has been appointed executive vice-president of Eaton Laboratories. Dr. Paul F. McLeod has been named medical director to succeed Dr. Daily. Frank M. Ault has become sales manager, and William Hayden, chief of division of chemical engineering.

Reiner with Food Research

Dr. Laszlo Reiner has been appointed staff consultant to Food Research Laboratories in the fields of pharmacology, toxicology and medicinal chemistry. He had formerly been director of research of the laboratories of Burroughs-Wellcome & Co., and of the pharmaceutical division of Wallace and Tiernam.

Orbis Moves Chicago Office

Orbis Products Corp. has moved its Chicago offices to 5719 North Central Ave., Chicago 30. The new telephone number is Spring 7-4757.

Lederle Apothecary Shop

Lederle Laboratories Division, American Cyanamid Co., officially opened a reconstruction of an 18th Century Apothecary shop at Pearl River, N. Y., as a permanent exhibit. The purpose of the exhibit is to illustrate the strides pharmacy has made in the past two centuries.

Among those who visited the laboratories at the opening were Dr. Newell Stewart, president-elect of the American Pharmaceutical Association; Dr. Robert P. Fischelis, executive secretary of the Association; Dr. John O'Neill Closs, executive secretary of the American Pharmaceutical Manufacturers' Association; George Griffenhagen, associate curator, division of Medicine and Public Health, Smithsonian Institute, Washington, D. C.; Howard B. Fonda, vice-president of Burroughs-Wellcome; and M. S. Barker, Magnus, Mabee & Reynard, Inc.

Howard B. Fonda, vice-president of Burroughs-Wellcome, left, and Dr. John Bird, Lederle, examining pill-making machine in permanent exhibit of an 18th Century Apothecary shop at Lederle Laboratories. Mr. Fonda donated the pill-making machine.

Receive Honorary Degrees

Dr. William A. Feirer, executive vice-president, E. R. Squibb & Sons, and director of the Squibb Institute for Medical Research, was awarded the honorary degree of Doctor of Science by Rutgers University at the Spring Commencement exercises.

William E. Gaunt, Squibb director of quality control; Raymond L. Thatcher, assistant director of quality control; and Stanley Levine, also of the Squibb quality control division, were awarded Master of Science Degrees in Applied Statistics at the same time.

President Lewis Webster Jones, extreme left, of Rutgers University, congratulating four Squibb executives who were awarded degrees at Spring commencement exercises. Left to right: Dr. William A. Feirer, executive vice-president and director of Squibb Institute for Medical Research; William E. Gaunt, director of quality control; Raymond L. Thatcher, assistant director of quality control; and Stanley Levine, also of quality control.

Reibel, V.P., Hudnut Sales

Bertram Reibel, formerly director of advertising at Revlon Products Corp., has been appointed vice-president and creative director of the Hudnut Sales Co., according to Alfred E. Driscoll, president, Warner-Hudnut, Inc.

He will be responsible for the creation and sales development of new cosmetic and specialty products; the building of consumer appeal for Richard Hudnut products; the styling of Hudnut packages; and planning advertising and promotional campaigns.

CSC Executive Changes

Geoffrey H. Snider, manager of the Louisville, Ky., district office, Commercial Solvents Corp., has been named manager of the Boston district office, according to F. E. Maple, general manager of the industrial chemicals sales department. The post had been held by James A. Farley, recently named field sales manager.

J. H. Brinton Marple, currently attached to the New York sales office, is replacing Mr. Snider at Louisville.

Arthur F. Williams, formerly of the Boston district office, will replace Mr. Marple in New York.

New P-D Lab., India

Parke, Davis & Co. formally opened a new manufacturing laboratory in Bombay, India, on July 8 with a special luncheon and plant tour for some 40 representatives of the city and national governments, and the medical and pharmaceutical professions. Included were Raj Kumair Amrit Kaur, Indian Minister for Health; Shantilal H. Shah, Bombay Minister for Labor and Public Health; and Dr. Jal Patel, honorary surgeon to the President of the Indian Union.

E. S. Bauer, of Parke-Davis' overseas division, attended from Detroit.

The new laboratory will manufacture a full-line of basic Parke-Davis products to meet the requirements of the Indian medical and pharmaceutical professions.

This is the third overseas laboratory opened by Parke-Davis during the last few years, making a total of nine manufacturing units operated by the company abroad.

Roure-Dupont Men Traveling

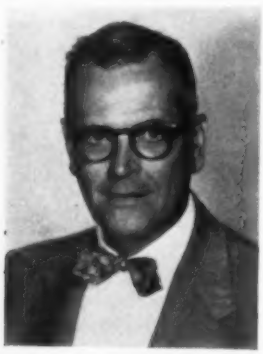
Louis Amic, managing director of Roure-Bertrand Fils & Justin Dupont of France, and president of Roure-Dupont, Inc., New York, visited New York early in July on an important business trip.

Jacques d'Aigremont, executive vice-president of Roure-Dupont, Inc., after an extensive business trip through the United States and Mexico, left for Europe on July 16 with his bride, the Countess d'Aigremont on a combination business and vacation trip. He is visiting France, Italy and other sources for the purchase of raw materials.

Goett with Atlas Powder

Edward J. Goett, formerly with Chas. Pfizer & Co., has been appointed director of a newly created commercial development department by Atlas Powder Co., according to Ralph K. Gottshall, president.

G. H. SNIDER



J. H. B. MARPLE

ARTHUR F. WILLIAMS

Albert Verley & Company's
Florantème
. . . the total fragrance of a florist's
shop laden with fresh blossoms.

Albert Verley & Company's

enhances any floral composition—or provides a base for modern perfume creation

Employed alone, Floranteme most nearly reminds one of the total fragrance of a florist's shop laden with fresh blossoms. It is impossible to single out the fragrance of any one flower in this intriguing combination.

Floranteme has unlimited possibilities of enhancement for all floral compositions—but it is of even greater value to you as a base upon which to fashion a modern creation that is uniquely your own.

For new inspiration and new appeal in your favorite formulas, experiment with Floranteme. Write for working sample.

$18 per lb.

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466-472 W. Superior St., Chicago 10, Ill.
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ALBERT VERLEY & COMPANY
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Representatives in all principal cities throughout the world.

Where Your Dollars Have More Scents
Albert Verley
& COMPANY
Headquarters for Odor Appeal

Synthetic Aromatic Products and Organic Isolates • Synthetic Flower Oils and Aromatic Bases • Bouquets and Finished Compositions

GEORGE N. VON STERNBERG

RICHARD D. WATERS

Named Mgr. Hospital Sales

George N. Von Sternberg has been appointed manager of hospital sales for Lederle Laboratories division, American Cyanamid Co., succeeding G. W. Nixon who has become assistant sales promotion manager. He had formerly been district manager of the North Los Angeles area.

van Ameringen Anniversary

Van Ameringen-Haebler, Inc. celebrated its quarter-century anniversary under the present corporate name on June 7 at its annual Spring outing in Middletown, N. J. Mr. Van Ameringen, president, briefly interrupted a European business trip to attend the company-wide celebration, and at the dinner which climaxed the day's activities, both he and Dr. Haebler received scale models in stainless steel of the newest high-vacuum stills which were recently put in operation in the new Union Beach plant.

These models were presented as a gift from the employees by Charles O. Tanc, vice-president in charge of production.

The following officers and employees of the company received honors, having served can Ameringen-Haebler for 25 years or more: Charles A. Buckie, Ernest Clift, Ida Cohen, A. J. Dillinger, Sidney Friend, Fannie Goldstein, W. T. Haebler, Marvin Hawk, Frank Holzschneider, Thomas Kilpatrick, Elsie M. Kramer, John Merritt, Viola Roen, Martinious Schippers, Madeline Seaton, John Shanahan, Mr. Tanc, Mr. van Ameringen, and John F. Wagner.

Nelson Promoted by Colgate

Dr. Manno Frederick Nelson, Jr., a chemist in the department of research and development, has been promoted to group leader of the Colgate Palmolive Co. He will be in charge of one of the company's nucleonic laboratories.

Waters, V.P., Vick Chemical

Richard D. Waters has been elected a vice-president of Vick Chemical Co., according to E. L. Mabry, president. He will spend a substantial part of his time furthering the company's program of diversification and expansion, in addition to special assignments from the president's office.

TGA Moves Headquarters

The Toilet Goods Association has moved its headquarters to Suite 2006, 1270 Avenue of the Americas, New York 20. The telephone number remains COlumbus 5-5443.

Eickmeyer in Europe

Henry H. Eickmeyer, a member of the Schimmel & Co. sales staff is spending the summer in Europe and will return to the United States late in the season.

Shepherd in Europe

H. R. Shepherd, vice-president in charge of research, Connecticut Chemical Research Corp., is on a business trip to England and France, according to A. O. Samuels, president. He will aid in the establishment of an affiliated aerosol company servicing England and the Continent. Mr. Samuels joined him in England in late July.

SAACI Clam Bake

The Salesmen's Association of the American Chemical Industry, Inc., featured an old fashioned clam bake in place of the regular dinner at its third golf outing of the season on August 10 at the Tamarack Country Club, Greenwich, Conn.

Squibb Receives Award

E. R. Squibb & Sons recently received a Distinguished Service Award for a "very substantial contribution to public health" from Saginaw County, Michigan, where an extensive research project on immunization was undertaken.

During the years, 1943 to 1950, Squibb spent a very substantial sum of money in Saginaw County to promote research in the field of immunization against Diphtheria, Whooping Cough and other preventable diseases.

The award was made to Dr. William W. Bunney, Squibb vice-president.

Dr. William E. Bunney, vice-president of E. R. Squibb & Sons, addressing audience after accepting a Distinguished Service Award on behalf of company. Award was given by Saginaw County, Mich., for Squibb's contribution to public health. Gov. G. Mennen Williams, right, looks on.

Deodorants with G-11®

(Brand of Hexachlorophene)

remove the cause of body odor

Soaps, detergents, creams, colognes, sticks and lotions containing G-11 are making dramatic sales increases because they combat the fundamental cause of body odor.

Body odor, particularly underarm odor, is caused by the action of skin bacteria on perspiration. Research has shown fresh perspiration to be odorless until it is contaminated with skin bacteria. G-11 combats these bacteria and thus removes the basic cause of the odor.

G-11 remains on the skin, even from soaps which are thoroughly rinsed off with water. Thus the deodorant action persists for days. Persons who have used deodorants with G-11 for three and four years show no immunity to their action.

Over seventy scientific articles, mostly by independent researchers, have been published over the last ten years attesting to the antibacterial and deodorant performance of G-11.

In addition, G-11 is not perceptible while on the skin, has no harmful effect on clothing, is compatible with perfumes, is readily soluble in soaps and cosmetic formulations, and is non-staining and non-irritating.

Write now for technical bulletins and formulas for G-11.

SINDAR® Corporation
Industrial Aromatics and Chemicals
330 West 42nd Street, New York 36, N. Y.

Branches: Philadelphia • Boston
Cincinnati • Detroit • Chicago
Seattle • Los Angeles • Toronto

JOHN E. PENDERGAST

Promoted by Park & Tilford

John E. Pendergast has been promoted from district drug sales supervisor to national drug sales director of Park & Tilford, according to Mitchell T. Lynch, national sales manager. He will be in charge of the company's sales to drug, independent variety, grocery, department and self-service laundry stores, as well as to wholesale distributors.

Shepherd Talks on Aerosols

H. R. Shepherd, vice-president in charge of research, Connecticut Chemical Research Corp., delivered a talk on aerosols at the July luncheon of the Cosmetic Industry Buyers and Suppliers. He stated that progress in aerosol packaging during the coming years promises to be as dramatic and significant as the great forward strides of the past few years. Production of aerosol more than triples in the brief period from 1951 to 1953, while in a single year, hair lacquer production doubled, and in two years, shaving later in aerosol form increased almost ninefold.

Mr. Shepherd briefly outlined some of the problems facing the aerosol industry, touching on new and improved cosmetics in the pressure-can form, the studies on glass bottles, new and cheaper propellants, pharmaceutical and ethical product uses, and the metered valve.

Warner-Hudnut Names Three V.P's.

Frank C. Cleary, Robert H. Gleckner and Paul R. van der Stricht have become vice-presidents of Warner-Hudnut International, according to Alfred E. Driscoll, president of Warner-Hudnut, Inc., and of the international division.

Mr. Cleary, will be vice-president for British Commonwealth and Asian operations. Mr Gleckner, vice-president for Latin American operations, and Mr. van der Stricht, vice-president for European operations.

THOMAS J. CASEY

Casey Transferred by Colton

Thomas J. Casey has been transferred from New York by Arthur Colton Co. to its Chicago office, according to Kenneth D. Hollidge, executive vice-president.

SKF Received A.M.A. Award

The American Medical Association presented an award to Smith, Kline & French Laboratories during the Association's annual meeting on June 24 in San Francisco. Citing the pharmaceutical firm for "its pioneering use of television in bettering the health of the nation," the A.M.A. made the first citation it has ever given to a member of the pharmaceutical industry. The citation paid tribute to SKF for its color television programs for doctors, presented over the past 5 years, and for its public television series called, "The March of Medicine," presented over the past two years.

Dr. Walter B. Martin, newly-installed president of the A.M.A., presented the award to Francis Boyer, president of Smith, Kline & French.

WILMER T. STARKEY

Starkey Retires, Pfizer

Wilmer T. Starkey, for the past 25 years New England representative of Chas. Pfizer & Co., retired on July 31. A group of his friends gave him a surprise luncheon at the Algonquin Club in Boston on July 12, presenting him with a set of three leather luggage bags, and a leather toiletries bag for his wife.

Upjohn Exec. Promotions

Edward H. Coleman has been promoted from sales manager of the Upjohn Company's New York branch to the firm's international division, according to E. G. Upjohn, president. He will share the responsibility for foreign sales with H. B. Roberts.

Max R. Lum, formerly divisional sales manager of the New York branch, has succeeded Mr. Coleman as New York manager.

Eaton on World Med. Board

Melvin C. Eaton, president of Norwich Pharmacal Co., has been elected to the board of directors of the United States Committee of the World Medical Association.

New buildings for Hoffmann-La Roche, Inc. which is expanding line of synthetic pharmaceuticals. At left, building for production and packaging Gantrisin and other liquids, ointments, creams. Structure at right will provide additional space for chemotherapeutic and bacteriological research.

Our equipment makes the difference in your Fatty Acids . . . it is not only most modern but it is operated by men who have years of "know how" in the manufacture of Fatty Acids.

What makes the difference in your **FATTY ACIDS?**

All raw materials pass through counter-current hydrolyzers which remove glycerine without contact with harsh splitting agents. The next step is passage through modern continuous process stills of stainless steel.

A. GROSS & COMPANY

Finally, RED OIL is separated from STEARIC ACID by hydraulic "presses." Naturally, since no solvents of any kind are employed in this operation, our Red Oil and Stearic Acid are free from undesirable esters. This gives you a desirably high acid value.

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Uniformity, light color and extreme stability to oxidation are built into our Fatty Acids. *Send for samples and our catalog "Fatty Acids in Modern Industry."*

MANUFACTURERS SINCE 1837

New Upjohn Lab., Canada

The Upjohn Company of Canada has opened a new office building and laboratory in Toronto employing 100 persons. The plant, according to Robert S. Jordan, president of Upjohn, Canada, has 20,000 square feet of floor space, with room for possible expansion to 200,000 square feet.

During the ceremonies at the official opening of the plant, Donald S. Gilmore, chairman of the board and managing director of the Upjohn Co., stated that Canadian health and medical facilities are expanding at an unprecedented rate.

New office building and laboratory of the Upjohn Company of Canada which was recently opened in Toronto. Plant has floor space of 20,000 square feet.

Huisking Retires, Fritzsche

Fritzsche Brothers, Inc. has with great regret announced its acceptance of the request for early retirement by Joseph A. Huisking, a vice-president and director of that company. Mr. Huisking, who has not been feeling well for some time, was led to this decision by his need of an indefinite period of rest and freedom from business responsibilities.

He has retired also as treasurer and director of the affiliate company, Fritzsche Brothers of Canada, Ltd.

The officers and all his associates join in sincere best wishes for a pleasant and happy retirement.

D&O Appointments

Bill Ammon, former supervisor of quality control for the Stange Chicago plant, Dodge & Olcott, Inc., has joined the staff of the new D&O dry soluble seasonings department and will work in the control laboratories and plant located in Hawthorne, N. J.

Jake Glueck, formerly with Felton Chemical Co., has been with the D&O flavor department laboratories in New York.

Fritz Schubert and Ray P. Williams, formerly with Naugatuck Aromatics and the du Pont plant in New Brunswick, respectively, have joined the technical staff of the D&O perfume laboratories.

Heinrich on Business Trip

Dr. Herbert Heinrich, director of research of Kolmar Laboratories, recently left on an eight-week trip to Europe, where he will visit Kolmar's plant in Paris and the sub-plant in Germany. He will do explorative research work and also follow up on contacts that he established when visiting a few years ago.

Straayer in New Schering Post

George C. Straayer, manager of Schering Corp.'s professional service Department, has been appointed director of the company's newly created trade relations department, according to Herman W. Leitzow, domestic sales manager.

Celebrates 90th Birthday

Jake Manheimer celebrated his 90th birthday on August 16 and will mark his 78th year in essential oils on September 6.

At 12 years of age he began working for Leo Bernard & Co., Maiden Lane, as a $2-a-week office boy. Having studied at Cooper Union in the interim, he became a salesman six years later, and at the age of 21, he bought out the Bernard firm which, since 1898, has been J. Manheimer.

The offices and storerooms and laboratory are now located at 214 East 21st Street, plus a filter paper factory at Couze, France, and a refinery at Grasse.

BILL AMMON

FRITZ SCHUBERT

With Bradley Container

Dick Muller has been appointed Midwest sales manager of the Bradley Container Corp., and Clint Booth, West Coast district sales manager, according to Henry E. Griffith, vice-president and general sales manager. Mr. Muller had formerly been Chicago district manager of Plax Corp., and Mr. Booth, sales manager for Flek Corp.

JAKE GLUECK

R. P. WILLIAMS

THE SWITCH IS TO...

FATTY ALCOHOL SULFATES

The new Stepan line of fatty alcohol sulfates can offer important advantages for use in a wide range of detergent formulations.

In heavy-duty detergent, bar detergent, liquid detergent, and shampoo formulations these fatty alcohol sulfates offer superior washing qualities, emolliency, and the elimination of scum and bowl rings for hard water areas. They can provide excellent detergency without excessive soaking and foam for on-the-job rug cleaners and for use in textile scouring compounds. Their superior emulsifying properties make them ideal, too, for use in skin creams or other products that are rubbed into the skin.

STEPAN FATTY ALCOHOL SULFATES . . . GENERAL SPECIFICATIONS

	% Sodium Alkyl Sulfate	% Unsulfated Alcohols	% Sodium Sulfate	% Sodium Chloride	% Moisture	pH
STEPANOL M 1, M 2	28.0-30.0	1.5-3.5	1.0-2.5	0.5-1.5	62.5-69.0	7.0-8.5

Write for free Samples...

Stepan fatty alcohol sulfates are available for use as an important component in your present formulation or in a combination from the extensive Stepan line of fatty alcohols and synthetic detergents as a completed formulation tailored to your particular requirements.

THE **STEPAN** CHEMICAL CO.

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FATTY ALCOHOLS • FATTY ALCOHOL SULFATES • BULK LIQUID DETERGENTS • SULFONATED OILS • AMIDES • FOAM STABILIZERS • ALKYLPHENOL POLYALKOXY SULFATES

Denis I. Duveen standing beside 450-lb. Tuna which he landed during a recent vacation in Nova Scotia.

New Squibb Labs. in Canada

E. R. Squibb & Sons of Canada held groundbreaking ceremonies for new pharmaceutical manufacturing laboratories at Ville St. Laurent, a suburb of Montreal. Situated on a 52-acre site, the installation will consist of a main and three auxiliary buildings providing more than 80,000 square feet of floor space. This is more than double the space provided by present facilities.

The new plant is expected to be completed in December of this year, with occupancy taking place in March, 1955.

New Warehouse for Wyeth

Wyeth Laboratories has opened a new one-storey office and warehouse building in Secaucus, N. J., to provide improved shipping service to hospitals, doctors and pharmacists in Connecticut, northern New Jersey and eastern New York. The new building, according to Stuart V. Smith, vice-president and sales director, contains 34,000 square feet of office and storage space.

Parchois with Tombarel

Pierre Parchois, formerly with E. I. du Pont de Nemours & Co., and Coty, Inc., has joined the staff of Tombarel Products Corp. as chief perfumer.

Mr. Parchois has been well known for many years in the perfume industry in this country as well as abroad.

Mooney Promoted by Lilly

Joseph S. Mooney, formerly head of personnel relations in Lilly's Tippecanoe Laboratories, has become manager of administration. He fills the vacancy created when John J. Rench was named assistant director of the personnel relations division in Indianapolis.

Kolmar Plant, Mexico

W. J. Wick, executive vice-president of Kolmar Laboratories, has completed arrangements for a Mexican plant, a step which will enable Kolmar to service the entire North American Continent.

The plant will produce lipsticks and related items at first, and may widen its operations to other cosmetics in the next 12 months.

Sadoff with Bristol

Sidney N. Sadoff, formerly with H. K. Ferguson, has been appointed technical director of foreign operations of Bristol Laboratories Inc., according to James D. McNitt, vice-president in charge of manufacturing. He will be responsible for technical liason involved in Bristol's expanding commitments abroad.

Couderchet in France

M. G. Couderchet, president of Charabot & Co. Inc., left for France on August 6 to visit the company's principals in Grasse, Charabot & Cie. He will be away several weeks.

J. B. Straygold Established

J. B. Straygold, president and treasurer of Van Pell Chemical & Supply Corp., has announced the formation of J. B. Straygold & Associates, consultants of production, equipment and packaging. Mr. Straygold will at the same time continue in his Van Pell executive post.

The address of the new company is 48 East First Street, New York 5.

In Purdue Sales Post

Seynour A. Lubman has been appointed sales administrative assistant of the Purdue Frederick Co., New York ethical drug manufacturer, according to Benjamin Schneider, president. He joined the company in April as eastern divisional manager, having formerly been senior salesman at Harrower Laboratories.

Retires from Pitman-Moore

Dr. S. H. Regenos has retired after 35 years with Pitman-Moore Co., having joined the firm in 1919. He was presented with a 35-year service award by Hibbard O. Ball, executive vice-president, in special ceremonies attended by company officials.

He served as director of the company's biological laboratories until 1938 and since then has devoted almost full time to diagnostic services.

Wesley A. Stanger, board chairman, and M. M. Ricketts, president, Strong, Cobb & Co., as they left for Europe last month on inspection visit to foreign pharmaceutical firms.

50th Year with Sterling Drug

Anthony J. Saltalamacchia was last month honored by Sterling Drug Inc. on the completion of his 50th year with the company. Sixty-four years of age in October, he joined Sterling in 1904 when he was little more than 13 years old and served the next 43 years with General Drug Co., a Sterling subsidiary. He later transferred to Winthrop Products Inc. and the Bayer Company division, also members of the Sterling organization.

Mr. Saltalamacchia was assigned to the parent company in 1950, where he has since remained. During most of his 50-year service he has been employed as a receiving clerk.

During the luncheon celebration at the Hotel Biltmore on July 13, he was presented with a $1,000 U. S. Savings Bond and a wallet containing 51 one-dollar bills by John E. Mulhern, treasurer of the company. Joining in the tribute were Dr. J. Mark Hiebert, executive vice-president; E. I. McClintock, Harvey M. Manse, Stanley I. Clark and O. W. Ergenzinger, vice-presidents of Sterling; Dr. Theodore G. Klumpp, president of Winthrop-Stearns Inc.; and J. E. Wickes of the Centaur-Caldwell division.

Hobson Promoted by Squibb

Dr. Lawrence B. Hobson, associate medical director for E. R. Squibb & Sons since 1949, has been appointed director of overseas medical services, according to Theodore Weicker, Jr., president of the Squibb-Mathieson overseas division.

Jay D. Hoskins

Jay D. Hoskins, formerly chief chemist of the Zemmer Co., died in Pittsburgh on July 15. He was 82 years old.

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Specific gravity	1.070 to 1.090
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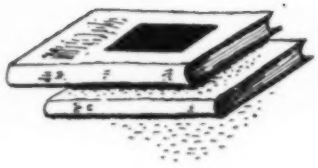

Trade Literature

Folic Acid and Vitamin B_{12}

Fine Chemicals Division, American Cyanamid Company, 30 Rockefeller Plaza, New York 20, has issued 32-page Technical Bulletin No. 1 on Folic Acid and Vitamin B_{12}: Their Interrelationships. Subjects covered are formation of blood cells—megaloblastic anemia, roles of folic acid and vitamin B_{12}, therapy of the megaloblastic anemias—relationship to nucleoprotein metabolism—growth and development studies—the metabolism of labile methyl groups. A bibliography is also included.

Carbowax Methoxy Glycols

Carbide and Carbon Chemicals Company, 30 East 42nd Street, New York 17, has issued a new technical bulletin (F-6736) on Carbowax methoxy glycols. Physical properties, specifications, and shipping data are included for No. 350, No. 550 and No. 750. These chemicals are particularly useful as detergents and emulsifying, dispersing, wetting, and penetrating agents.

Analytical Chemistry

Analytical Chemistry in Retrospect and Prospect, by George D. Beal, of the Mellon Institute is available in reprint form from the Institute at 4400 Fifth Avenue, Pittsburgh 13.

Booklet on Fine Perfumes

A booklet entitled How to Choose Fine Perfumes, written by Philip Cortney, president of Coty, Inc. is available from that firm at 730 Fifth Avenue, New York 19.

Neomycin Bulletin

Chas. Pfizer & Co., 11 Bartlett St., Brooklyn 6, N. Y., has issued Technical Bulletin No. 63 entitled Neomycin. The bulletin gives the properties, bacterial spectrum, clinical indications of neomycin as well as a bibliography.

Barbituric Acid Data

Kay-Fries Chemicals, Inc., 180 Madison Avenue, New York 16, has issued a technical bulletin on barbituric acid. It contains the chemical's properties and specifications, data on packaging and toxicity, as well as suggested applications and a resume of past experimental work.

Rejayfix Marking Machines

Popper & Sons, Inc., 300 Fourth Avenue, New York, has issued a catalog on their new Rejafix Marking Machines which are made in a large and varied assortment, and which are said to be outstanding for their ability to print with extraordinary clarity any design or lettering down to the minutest characters.

SeaKem Extracts

Seaplant Chemical Corporation, 63 David Street, New Bedford, Mass., has recently undertaken the publication of a house organ entitled SeaKem Extracts. Volume I, No. 1 has stories on various uses of SeaKem Irish Moss extractives in food, drug, cosmetic, and industrial stabilizing problems. Also included is technical information on the behavior of SeaKem stabilizers and testing tips. To be put on the list to receive this booklet, write to Byron Spence general sales manager.

MMR Folder on Flavors

Magnus, Mabee & Reynard, 16 Desbrosses Street, New York 13, have issued a four-page folder entitled Modern Flavors for Modern Medicines.

Bulletin on Detyl Extra

Givaudan-Delawanna, Inc., 330 West 42nd Street, New York 36, has published a new eight-page technical bulletin on Detyl Extra. This bulletin—GD-2—contains toxicity data on Deltyl Extra, information on the general characteristics of the product and on its application in cosmetics as an exceptional substitute for vegetable and mineral oils.

Croda Lanolin Derivatives

Croda Inc., 51 Madison Avenue, New York 10, has issued a leaflet on Croda lanolin derivatives, such as, Fluilan, Solan, Sorba, and Super Hartolan, and numerous others.

Silicones in Cosmetics

Dow-Corning Corporation, Midland, Mich., has issued a technical bulletin entitled Silicones in Cosmetics. This data Sheet 3-100, tells the uses of these chemicals in cosmetics and gives formulas as well as a bibliography.

Booklet on Boric Acid

Pacific Coast Borax Co., 100 Park Avenue, New York 17, has published a booklet entitled The Truth About Boric Acid and Borated Talcs. The company states that boric acid under proper conditions of use is completely harmless and of important benefit in medicinal and other products. The booklet was originally distributed to 20,000 doctors and medical personnel attending the recent A.M.A. convention in San Francisco.

Oriental Perfumes by D & O

To many women the exotic mysteries of the Far East hold an irresistible fascination as is well illustrated by the popularity of the Oriental Perfumes. To the manufacturer in search of a base for a fine Oriental fragrance, D & O recommends individual experimentation with trial quantities of these four unusual compositions.

AMBRE 832*—The paradoxically warm-cool character of this dry, woody oriental is gracefully enhanced with rose and lily florals.

DISCREOL 8153*—Moody harmonies of the heavy oriental are gracefully combined with mossy and spice notes.

KAYAM 15*—A rose-jasmin bouquet skillfully blended with citrus and sweet oriental notes which vividly portrays the magic of the Far East.

OBLIGATO*—The sensuous strains of a rosy, deep oriental in which spice notes are effectively blended.

*Trial quantities and specific recommendations on request.

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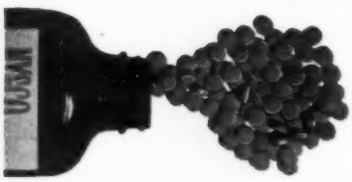

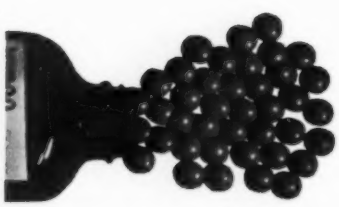

Nysco Laboratories, Inc., Long Island City, N. Y., was recently faced with an emergency order for 6,000,000 ferrous sulfate tablets. Only one of its eight Stokes Model BB-2 tabletting presses could be spared for the job . . . yet the press produced the prescribed quantity in just four days . . . without interrupting regular production schedules.

Usual output at Nysco Laboratories, Inc. is around 20,000,000 standard preparation tablets per week, produced from a stock of over 170 sets of Stokes punches and dies. Over 3,000 different preparations are made by this private formula manufacturer for the Armed Services, hospitals, wholesalers and exporters.

Stokes has the right machines and proved techniques for practical and profitable tabletting manufacture. Easily adjusted or adapted for different tablet sizes, shapes, pressures and speeds, Stokes tabletting presses can be operated at low cost, high output, and maximum efficiency.

Pharmaceutical manufacturers may consult with the Stokes Advisory Service and Stokes field engineers, without obligation, on such problems as tablet formulae, punch and die design, and improved manufacturing and operating procedures.

Send for Catalog No. 800 "Stokes Tabletting Presses", which pictures and describes tabletting processes, and for Catalog No. 600, "Stokes Pharmaceutical Equipment", which describes the complete line of Stokes pharmaceutical machinery now available.

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Management Forum

by Francis Chilson
INDUSTRIAL CONSULTANT

Advice to V.P.'s

If you don't like your job don't resign and don't get fired. Swallow your pride even if it sticks in your guts like an ostrich egg—until you've clinched another job. Then you can walk into Mr. Bigbrass and spit in his eye. It is difficult for any man, who has had a big job in the industry, to get another one equal to it or better. It is almost impossible if he quits his old job or gets fired. The man who is "out" and who has had a really big job and a substantial salary is always a suspect. His prospective employers always feel that he never would have left such a good job if it weren't his own fault. There must be a reason other than the one given by the person who is "out." Hence, since the prospective employer won't believe the stated reason, he will invent one or more of his own—detrimental ones always.

In the years I have been practicing in this industry many vice presidents, a few general managers and even a couple of presidents have sought my aid after they were out. Some I could help. Some I could not. Some of these men never succeeded in reestablishing themselves in the industry in which they were nurtured and to which they had still so much to give.

One of them—a famous character in the industry in his time—said to me just before he died: "My friends in the industry gave me an elaborate sympathy dinner when I left my company. Everyone was sure that with all my experience in the industry some of the big outfits would snatch the opportunity to give me a big job. But nobody ever did. Nobody ever made me an offer. But it would have salved my pride if they had."

This man didn't really need a job. He was well off. He was in his late fifties with all his financial obligations behind him. His age was against him of course. But he was a man of outstanding ability and it was generally acknowledged that he had built the company from which he had severed his connection (the ruckus came about through a change in presidents) and, mind you this, he knew on a first-name basis the presidents, the general managers and the marketing directors of all the large and all the medium sized pharmaceutical companies in the United States and a substantial majority of the top managements of the cosmetic companies as well. But no one offered him a job. *No one.*

This case is by no means an isolated one. I have known of many similar cases. I know of three such cases right now where top level men are out and are having a hell of a time getting back. It is not only that the prospective employer suspects the applicant's motives in quitting his job. The employer is afraid to make a mistake because the salary involved is always substantial; he may lack the moral courage to fire one of his own men and replace him with a new one, because the new one, in a new environment and in a new organization, might not work out either. A gamble is involved and the president or general manager knows that his board will hold him responsible if he makes a serious blunder in selecting a man for a key post. Presidents have indeed been tossed out themselves for making too many blunders in filling key posts.

Yet the president of any good sized company will tell you how difficult it is to create a good management team; how difficult it is to recruit good men, but when they have an opportunity to hire a good man, they shy away from him like poison unless the man is introduced under the right circumstances—that is, the man must still be in his job.

Opposed to this is the tacit agreement among the manufacturers in this industry (and in virtually all others as well) that they will not pirate each other's key men; that they will not even talk to them until after they have resigned their previous jobs. But when a man does resign they suspect his real reasons for so doing. That's illogical human nature in action.

What I have said here does not apply to young executives farther down the scale. Top managements expect the junior executives to quit or get fired and they believe they can train them to fit particular organization patterns. If an attempt ends in failure not

Eli Lilly and Company adjusts the weather in drug packing cabinets...

To assure accurate measurement, vital drugs should be weighed in a DRY atmosphere. This girl works through sealed hoods, weighing drugs and filling ampoules at Eli Lilly and Company, Indianapolis. The Lectrodryer at the right feeds DRY air to her cabinet.

Regardless of outside humidity, the air inside this drug packing cabinet is held at a moisture content of 2.5 grains or less per cubic foot. Sensitive drugs require such DRYness to retain their potency and chemical balance.

Lectrodryers DRY the air for these cabinets at Eli Lilly and Company, Indianapolis. A woman, supervising the drug packing, watches cabinet humidity and adjusts the DRY air feed to maintain a constant low-moisture condition.

DRYness to speed production or to protect a product may be exactly what you need. A Lectrodryer* can provide that DRYness. Lectrodryers are DRYing air, other gases and organic liquids in volume to dewpoints as low as -110°F... to relative humidities lower than 10%.

Write for *Because Moisture Isn't Pink*, a booklet telling you about typical Lectrodryer installations in various industries and how these machines may help you. Pittsburgh Lectrodryer Corporation, 309 32nd St., Pittsburgh 30, Pa.

In England: Birlec, Limited, Tyburn Road, Erdington, Birmingham.
In France: Stein et Roubaix, 24 Rue Erlanger, Paris XVI.
In Belgium: S. A. Belge Stein et Roubaix, 320 Rue du Moulin, Bressoux-Liege.

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much is lost, and, in the final analysis, the field is much broader to choose from. They can try and try again.

What I have said here applies with peculiar force to top management men and the moral of the tale is: Don't quit; don't get yourself so involved that you will be fired before you have nailed down another job.

The second moral is—for company president's—the best way to build an organization is from the inside. Rear your executives from the time they are weaned—and I say this in spite of the fact that home grown organizations have a tendency to become ingrown and eventually to deteriorate. But to prevent that is your job, Mr. President; you're the leader of the team.

One of the best ways of doing this, Mr. President, when you have no alternative, is to introduce new blood not only at the bottom but at the top. A risk is involved, to be sure, but risk is the heart and soul of business, and the risk of introducing new blood at the top is not always as great as it seems. On the contrary there may be no risk. Some of the men I know, who got out or were fired, were undoubtedly the ablest men in their former organizations. As you know, Mr. President, the quickest way for a key man to get into hot water or to get fired from many organizations is to demonstrate too often and too obviously that he is smarter than Mr. Bigbrass. Even you probably couldn't take that.

1964

The vitality of our economy is astounding. From time to time predictions are made of a general recession in business, and, while local and temporary recessions do take place, the economy as a whole rolls merrily on. The lack of roads will temporarily act as a brake on the automotive industry and it appears that this industry will slow down far short of the "two cars in every garage" state of affairs. But other things will take up the slack—housing particularly. The compact modern house with its built-in kitchen is but the prototype of the 1964 house which will have *everything* built in so that you will be able to trade your old house every year for a new model somewhere else. All you'll have to do is pack up your personal possessions, sign the finance papers and proceed to the new house.

I am not kidding. We like change. We like to move. Americans never had the love of house and home that is characteristic of the English. They see no virtue in living in an old house simply because their parents or grandparents lived in it before them. On the contrary they want to get out of "the old dump" as soon as possible or pull it down.

I have seen some prefabs with all furniture built in. Kitchens, bedrooms, living rooms—the works. They were almost trailers in their completeness and compactness and differed only in that they were much larger and of course were not portable.

Lack of household help is another factor that is accelerating the demand for houses that can be maintained by individual housewives with relatively little effort. It is a hell of a note that men who make $50,000.00 a year and more are forced to live without servants simply because they are not available at any price. Twenty years ago a man with that scale of income would have at least two servants. In some part of the country servants are not to be had regardless of wages. Hence, electric servants and the automatic house.

When you analyze the furniture of a house functionally you realize that regardless of what it is, it simply provides space for storage, sitting space, reclining space and work or table space. With the exception of the bed, all bedroom furniture functions only as storage space. Much more adequate storage space is provided when the drawers, shelves and closets are built into the walls. And built-in units are much easier to clean. I was in a very fine home recently and was impressed by the fact that, with the exception of the beds and bedroom chairs, none of the bedrooms contained any furniture at all.

So prepare for the day when your wife will say, "The Smiths got a new house today. I think we should trade in this jalopy for a '64."

Work and Accomplishment

Many people seem unable to distinguish between hard work and accomplishment. I very frequently run into situations where in spite of intensely hard work and complete devotion to the job, executives fail to meet their objectives. When they are called on the carpet they are broken hearted and feel that all their work and loyalty is not appreciated by the upper management. They simply do not see their problems in the entirety. They do a fine job or one phase of the project and fall behind on another. Recently I ran into a situation where the plant manager had been working fifteen hours a day for months in the huge task of maintaining production at an accelerating rate while putting a new plant into operation. He did a fine job maintaining production and a lousy job everywhere else. When Mr. Bigbrass called him to account he threatened to quit. He was mortally offended at being bawled out when he had passed up his vacation and had been working fifteen hours a day for months. Nobody appreciated his efforts. Nobody gave him credit for anything. He felt so sorry for himself he almost wept. His self pity was sticky. It smelled. He had put everything into his job except his head. Had he maintained a detached perspective of the whole project and not become fouled up in time consuming details he would have known where to apply pressure to keep the whole project moving evenly.

Antibiotics in Cosmetics

Some years back it occurred to me that research in antibiotics had been concentrated to such an extent upon therapeutic applications that possible uses in cosmetic and other fields had been overlooked. Since

antibiotics are such powerful germ killers or inhibitors and since bacterial decomposition is a primary cause of body odor, it seemed to me that deodorants offered a promising field of application. I had some formulas made and tested by a well-known national laboratory and my hunch was proved to be correct. Accordingly I applied for a patent on this and other applications. I had the product tested not only as an underarm deodorant but also as a sanitary napkin deodorizer. It works exceedingly well—to such an extent in fact that a single application in the armpits will last for a month. I might add that I double checked laboratory results with a panel of 250 women.

Rotary Tablet Press

Tablet production capacity far in excess of any comparable machine, low first cost and low tool cost are among the distinguishing features of the new Colton No. 216 Single, Rotary Tablet Press, Arthur Colton Co., 3400 Lafayette, Detroit 7.

Its production capacity of 1150 tablets per minute (as compared to 800 a minute for the previous No. 216), places it in comparison with many antiquated double rotaries which cost much more to buy, which still cost much more to tool, and which require many more complicated adjustments.

The new No. 216 retains all of the trouble-free performance features which made the previous No. 216 one of the most popular tablet presses on the market. It handles tablets up to 5/8" diameter with a 3/4" maximum depth of cell. It is versatile because there are only 16 punches and dies to provide, making change-over to different products quick, easy and inexpensive, and, the standard variable speed drive gives easy adjustment for various types of materials.

Another important new feature is the 3-point suspension feed frame which gives quick, easy, precise adjustment in relation to the table top; provides positive positioning on the die table to maintain proper clearance; and assures proper rake-off of tablets at all times.

Power is transmitted to the head through a twin disc type clutch and an automatic, adjustable excess pressure release protects the machine elements against accidental damage. The weight adjustment, the clutch lever and the lower pressure roll setting are within easy reach of the operator.

The rotary head is driven by gearing of extra capacity, completely enclosed and running in an oilbath, through a heat-treated helical pinion and ring gear which materially reduces power consumption. A high speed drive countershaft, mounted on suitable bearings, eliminates the need for an extra weight flywheel and permits the use of a standard motor. The head is mounted on rugged, anti-friction bearings.

Ready access to all working parts is provided. The main drive shaft is located below the machine head. The center of gravity has been lowered and the rotary head is completely guarded because no opening for head drive is necessary. Thus, tablet material does not sift down into the drive mechanism. Punches are shielded against dust by an easily removable cover. All construction is very rugged to provide rigidity, prevent vibration and consequent wear on parts and to maintain precision.

Loading Powder Mixers

Powdered materials for cosmetic and pharmaceutical use usually are received in paper sacks, drums and occasionally in wooden barrels. When processing units are small there is no problem in transferring dry materials into mixers and bins. But when these units are large the problem of transferral is not easy especially when the batches are compounded of several different types of material and the equipment must be used for several different purposes.

The primitive transfer mechanism is the bucket elevator. These are fine when used for single materials and hence need not be thoroughly cleaned. I have seen material with such a high arching factor that it wouldn't dump out of the buckets. This tendency to cling to the buckets is accentuated in humid weather and affects nearly all materials.

Vertical and tangential spiral conveyors offer no difficulties with respect to discharging material but their design offers cleaning difficulties almost as bad as those encountered with bucket elevators. I saw one set up of tangential conveyors which was designed so that the spirals could be removed entirely and the system washed. It was expensive.

Chain conveyors of the Redler type as well as all modifications and imitations—usually called "mass flow" conveyors—are effective for loading single materials but offer the same cleaning difficulties as bucket and spiral types. At this point it may be well to warn you that "complete discharge" or "commercially clean" to a conveyor manufacturer means that a unit will discharge all the material put into it within two to five per cent. To a pharmaceutical manufacturer this is not clean at all. Cosmetic makers can use equipment of this type for loading face powder materials by feeding into the conveying system all the small quantity materials in the formula first and finishing up with the bulk material—talc. A few pounds of talc left in the system will not affect the formula especially since it can be compensated for after the first run.

There are a number of tubular air conveyors on the market that work very well even in handling miscellaneous material. They can be designed so that they can be cleaned out perfectly. But they are expensive because of the compressors, vacuum pumps, separators and air reliefs that must be provided. One outfit developed a small vacuum cleaner affair for unloading sacks and barrels but the installations I have seen were not particularly satisfactory.

Smooth belt conveyors have been used where there is plenty of room to allow for a maximum incline of 30°.

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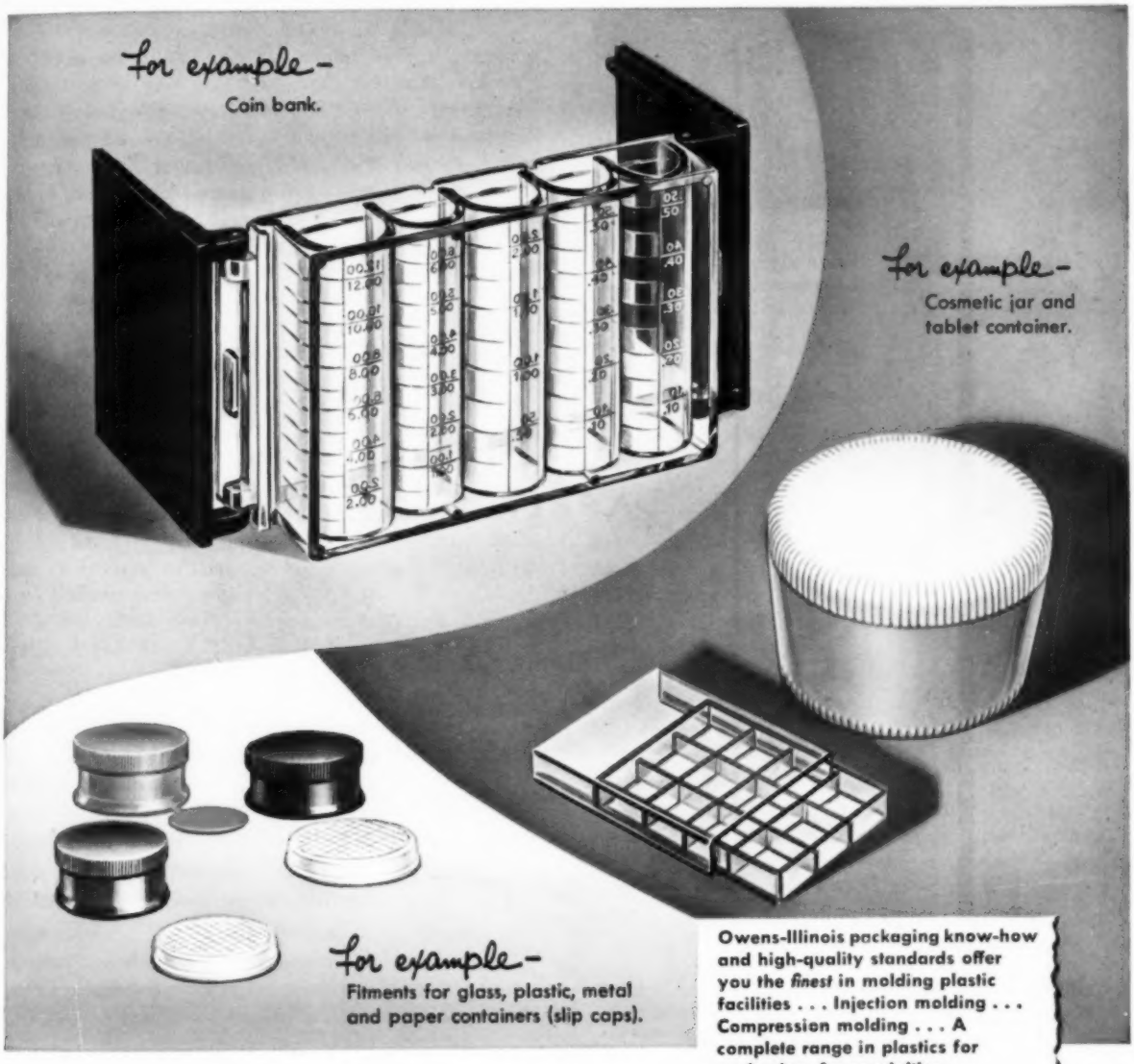

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Twenty is better. Smooth belts can easily be cleaned and the belts can be dished to prevent spillage over the side. Some people use belts to carry the unopened sacks to the dumping point. This requires two operators. A one man belt dumper is on the market. This carries the opened bag up and dumps it and then reverses to return the empty to the loading point. But often the returned sack is not always empty. Anyway it is slow.

There are zipper conveyors and various forms of tubular conveyors that will carry vertically, open up and discharge automatically and they can be cleaned. But they are expensive and hardly suitable for batch operations which vary from 500 to 2000 pounds as they do in the drug and cosmetic industry.

The monorail and batch hopper system is effective. The system permits complete discharge and the hoppers can be washed if need be. In one face powder operation I used monorail hoppers that contained a ton. A scale pit was provided in the floor so that when the empty hopper was lowered into it, the hopper could be loaded without requiring any of the operators to lift the sacks very high.

All monorail and batch hopper systems have the common requirement that above the discharge point there must be plenty of headroom—more than is required by any other system.

One batch hopper system provides an inclined track and chain drag so that the hoppers can be pulled up into the dumping position.

In palletized operations where materials are first weighed out and palletized, the pallets of weighed materials can be placed on a platform near the dumping point so that the several containers or sacks can be dumped by the mixer operator in a convenient manner.

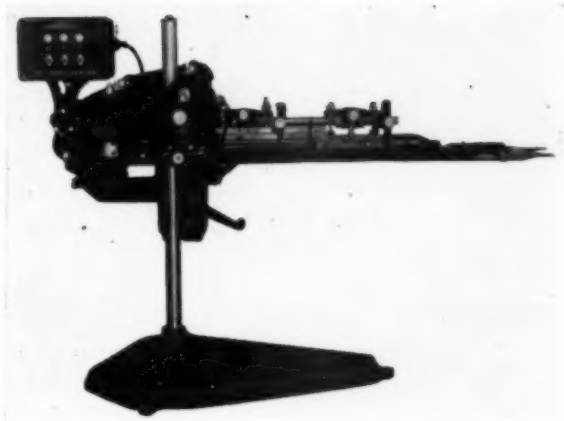
A perfect powder loading system should be portable, dustless, washable, fast; it should be amenable to operation by one man from the floor and it should discharge completely. When you find such a system let me know.

Hi-Speed Bag Sealing Machine

The Amsco Hi-Speed automatic sealer fits the bag snugly around the contents and straightens the package before sealing it. This is accomplished by means of an exclusive feed-in guide, and may be done either with a folded or unfolded seal.

A 12″ pre-heater channel allows thorough heat penetration, so that perfect seals are produced on every package. Standard sealing rollers for cellophane apply a 5/8″ wide knurl-bead crimp seal, with the bead impression running horizontally through the center of the seal. The knurl-bead impression provides a double seal for maximum strength, eliminating pin-points or other damage to the material. The front sealing roller floats, assuring automatic equalization of sealing pressure on varying thicknesses of material, such as encountered in gusset and duplex bags.

Heat, pressure and time are automatically controlled, and sealing head is fully adjustable through a 15″ vertical range. Standard sealing speed is 480 linear inches



per minute. Manufactured by Amsco Packaging Machinery, Inc., 31-31 48th Avenue, Long Island City 1, N. Y.

Compression Granulator

Some of you will be interested to learn that my roller compression granulator, on which I have been working so long and upon which I have pending patents, is now in the hands of an equipment builder who is well known to all of you. The present plan is to build four machines and to test them thoroughly in four different plants under operating conditions. On the basis of these tests the machine will probably be redesigned and made available commercially.

Three of the machines have been in use for the past three years at the plant of the Chattanooga Medicine Co. on a very difficult assignment. The company makes granulated senna which is sold as granules and also is compressed into tablets. Now senna is a spongy botanical and difficult to granulate. The previous process involved wetting, pelletting, granulating and drying. Now the process is very simple and the entire operation requires but a fraction of the space formerly needed.

Case Gluing and Taping Machine

Automatic gluing and taping in one pass is featured in a new case sealing machine introduced by the Clybourn Machine Corporation, 6481W North Avondale Avenue, Chicago 31, Illinois.

Both tops and bottoms of corrugated or cardboard containers are closed with a dust-tight double-seal in the same operation. Operation is entirely automatic except for replenishment of glue and tape.

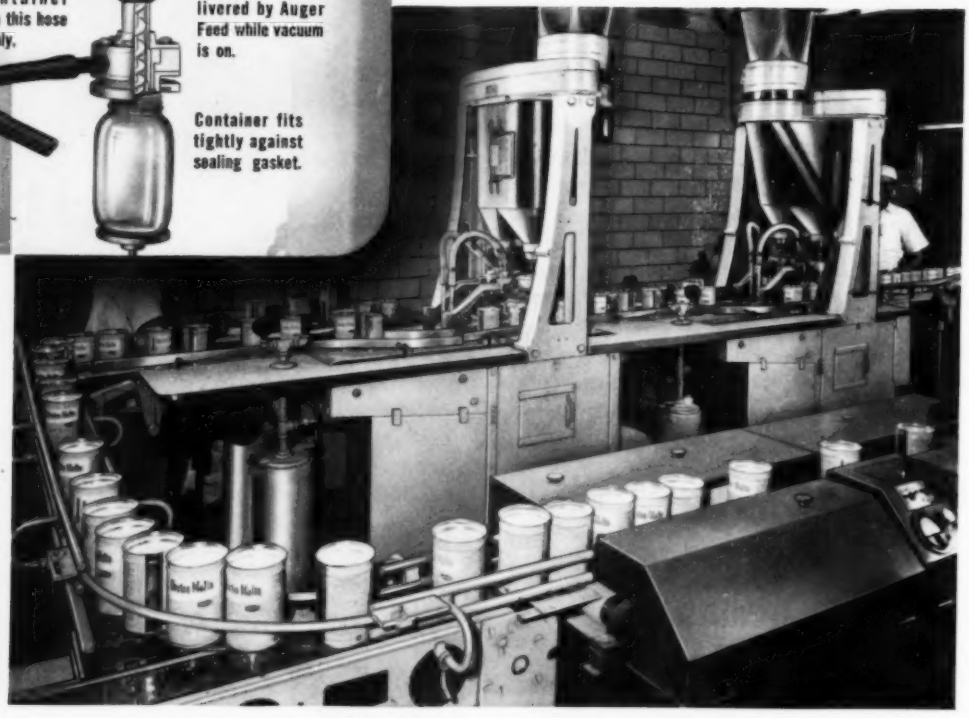
Standard machines are easily adjustable for carton sizes of 10″ to 22.4″ long; 5.1″ to 13.8″ wide and 4.9″ to 17.7″ high. Change of all three dimensions requires approximately three minutes. Special machines can be furnished to handle varied carton sizes of the same height without adjustment.

Adjustable glue rollers apply the desired quantity of glue to a small part or the entire area of the flaps.

AUGER+VACUUM=CLEAN ACCURATE FILL

with Stokes & Smith Fillers

AUGER-VAC—HOW IT WORKS
Vacuum is drawn on container through this hose assembly.
Desired fill is delivered by Auger Feed while vacuum is on.
Container fits tightly against sealing gasket.



One-pound cans of ®Dextri-Maltose are filled at a speed of 120 per minute with this Stokes & Smith Four-Station Automatic Filling Machine, at Mead Johnson Company, Evansville, Indiana.

Stokes & Smith modern Auger-Vac filling equipment protects profits by maintaining a clean, accurate fill, and reducing dusting loss to an absolute minimum.

Powdered coffee, cocoa, powdered milk, dehydrated foods and other products are tightly packed by Auger-Vac heads which can be individually adjusted while machine is running. Vacuum is first drawn on container and the desired fill then delivered by auger, accurately, without dusting. Stokes & Smith Model HG 86-87 will take containers up to one pound. For larger cans, up to five pounds, the single unit Universal Filling Machine is used. Write today for details on the complete line of Stokes & Smith Filling Equipment.

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Pacific Coast: SIMPLEX PACKAGING MACHINERY, INC., 534 - 23rd AVE., OAKLAND 6, CALIF.

fmc

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TRADE MARK

Each tape unit holds two 1500-foot rolls of gummed tape. An automatic alarm warns of low tape supply.

The Model F-24 Automatic Case Gluing and Taping Machine is of cast construction with welded feed and delivery ends. Taping units exposed to water are made of non-corrosive material. Vital bearings are self-lubricating. A chain-driven conveyor with transverse feeder bars pull cartons through the sealing section. Feed and delivery lines are equipped with V-belts, powered by chains.

Bottle Filling Machine

Perl Machine Mfg. Co., 68 Jay St., Brooklyn 1, N. Y., announces a new, fully-automatic bottle filling machine which requires no operator, and handles bottle sizes ranging from one-half ounce to one gallon, at speeds up to 180 bottles per minute.

Changing from one size bottle to another requires no change of parts, and can be done in a matter of minutes. The Perl machine features stand-still filling, thereby reducing danger to filling spouts or bottles, and eliminating agitation of the liquid. The unusual flexibility of the machine enables it to meet the requirements of any plant.

Full details and illustrated brochure on request.

Drum Cleaning Machine

A new airless abrasive blasting machine for the reconditioning cleaning of 30 and 55 gallon steel drums before painting and coating operations is announced by American Wheelabrator & Equipment Corp., Mishawaka, Ind. It handles the type of drums used for holding chemicals, industrial process materials, foods, oil, gasoline, grease, asphalt, paint, varnish, foundry core binders, plastics, and the like. The machine is capable of cleaning the exterior surfaces of closed-end drums and both the exterior and interior surfaces of open-end drums, together with the lids.

This Wheelabrator machine is equipped with a hydraulically-rotated table with a partition that divides the machine into two compartments or work stations. Each work station consists of two power driven spinner shafts that rotate one drum in the blast zone. Each station also has a fixture for holding the lids in the blast. This arrangement permits one station to be loaded and unloaded while the other is in the blast zone, so continuous operation can be maintained, and there is virtually no down time due to loading and unloading.

Cleaning is done by abrasive hurled centrifugally by a rotating bladed wheel mounted in the rear wall of the cabinet, and the spinner shafts are pivoted to enable the position of the drum with respect to the blast to be adjusted, so that either open or closed end drums can be hit at the proper angle by the abrasive. The partition on the main table keeps the blasting zone completely enclosed, so no abrasive can escape into the plant. After loading of the open station and blasting

in the closed station is completed, the table is revolved, whereupon the soiled drum enters the blast zone and the cleaned one is in a position for removal.

Among the special features of the machine are push button starting and stopping controls. No compressed air is required for operation of the machine. Loading and unloading is made easier, as the work station moves to the operator, and he does not have to operate doors on the cabinet to insert or remove work. He never needs to enter the cabinet. Important from the maintenance standpoint are the fixtures of the machine which have been designed so that they are sheltered from the blast by means of the drum to be cleaned.

The same abrasive can be used over and over. After striking the drum, the abrasive particles fall down into a hopper below, from where they are conveyed by an elevator to the top of the machine. There, the contaminants removed from the drum, plus the abrasive worn too small to be useful, are sorted out and the good abrasive is fed to the hurling wheel for reuse.

Ampoule Filler and Sealer

The PAC division, American Roland Corporation, 16 Hudson Street, New York, announces a new ampoule filling and sealing machine. The Model FMA, as it is called, will fill and seal up to 4000 ampoules an hour with great accuracy and economy. Only one unskilled operator is required to attend the machine, merely to load empty ampoules and remove filled ones. The FMA feeds, fills, seals, and discharges three ampoules at a time automatically. Filling quantities can be accurately set for amounts from .5 to 30 cc. Dripping is entirely eliminated, and the FMA automatically stops filling when the ampoule supply is exhausted or the needle (filling spout) is not exactly centered in the ampoule neck. This avoids waste of valuable material. Protective gases can be applied before or after filling. Sealing is done by the pull-seal method for an absolutely tight seal. Stainless steel construction and simply disassem y make the machine easy to clean and sterilize. Full details are available on request.

PATENT THOUGHTS AND TRENDS

(*Continued from page 200*)

Sunscreen Stabilizers

It is claimed that hydroxybenzophenones can be purified to such a degree that when used as antioxidants or ultraviolet absorbers, or both they do not discolor the materials with which they are used.

The process involved in purifying the hydroxybenzophenones is carried out by first dissolving the hydroxybenzophenone in a sufficient amount of an aliphatic ketone of from three to six carbon atoms or in a lower alcohol, lower glycol, or lower glycol ether to effect solution. To the ketone, alcohol, glycol, or glycol ether solution, 0.02 to 0.06 part by weight of hydrochloric acid, preferably of 30 per cent concentration, and from eight to 12 parts by weight of either an aromatic monobasic acid of from seven to nine carbon atoms or an open chain polygasic acid of from two to nine carbon atoms are added. If desired, 25 to 35 parts by weight of Nuchar (activated carbon), Filtercel, or any other decolorizing medium may be added to the ketone, alcohol, glycol, or glycol ether-acid solution. The solution is stirred and filtered into two and one-half to three parts by volume of water containing 40 to 60 parts by weight of hydrochloric acid of 30 per cent concentration, and eight to 12 parts by weight of the aforesaid aromatic monobasic acid or open chain polybasic acid. During the latter step a precipitate is formed and the precipitated product is then filtered and dried by conventional means, preferably vacuum dried at 45° C. Should it be desired to obtain a product having a higher degree of purity, the solution and filtration steps can be repeated two or three times.

This patent, U. S. 2,682,559 was obtained on an invention of L. N. Stanley, and A. C. Baggenstoss, and assigned to General Aniline & Film Corporation.

Vitamin K_1 Synthesis Using Boron Trifluoride Catalysts

Good yields are obtained when condensing 2-methyl-1, 4-naphthohydroquinone with a compound selected from the group consisting of phytol, isophytol, phytyl esters, isophytyl esters and phytyl ethers in the presence of a boron trifluoride catalyst.

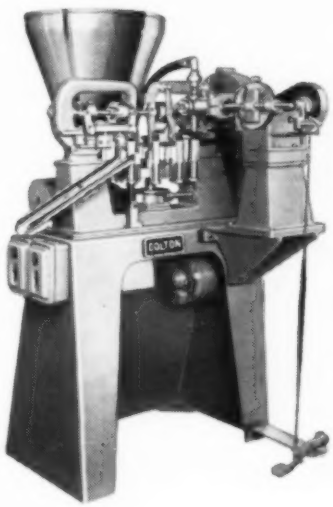
A patent U. S. 2,683,176, was obtained on the findings of two Swiss in-

(*Continued on page 252*)

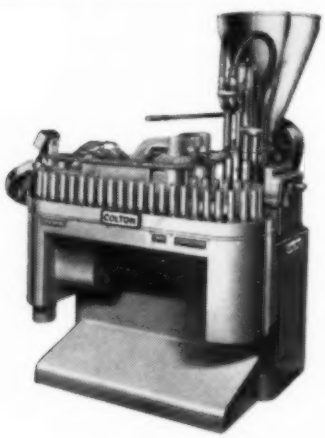
Mouse Seed	rodent exterminator	W. G. Reardon Laboratories v. B & B Exterminators (D. D. Md. 1933) 3 F. Supp. 467, 17 USPQ 406.
Spearmint	gum	L. P. Larson Jr. Co. v. Wm. Wrigley Jr. Co. (C. A. 7, 1919), 253 F. 2d 914.
Red Leaf	tobacco	Carthage Tobacco Works v. Barlow Moore Co. (C. A. 6, 1952) 5 F. 2d 469.
Taffy Tolu	chewing gum	Colgan v. Danheiser (C. A. 7 1888) 35 F. 150.
Wornova Shipova	garments	Wornova Mfg. Co. v. McCawley & Co. (C. A. 2, 1926) 11 F. 2d 465.
Vogue Hats	hats	Vogue Co. v. Vogue Hat Co. (C. A. 3, 1925) 6 F. 2d 875.
Stud	belt fastener	Greene, Tweed & Co. v. Manufacturers' Belt Hook Co. (C. A. 7, 1906), 158 F. 640.
Zero	clothing designed for winter wear	B. W. Harris Mfg. Co. v. Werber Sportswear Co. (C. C. P. A. 1950) 183 F. 2d 105, 86 USPQ 408.
Coco-Quinine	pharmaceutical preparation containing quinine colored and flavored with chocolate	William R. Warner & Co. v. Eli Lilly & Co., 265 U. S. 526.
Nervine	nerve tonic	Richmond Remedies Co. v. Dr. Miles Medical Co. (C. A. 8, 1927) 16 F. 2d 598.
Acid Phosphate	medicinal preparation	Rumford Chemical Works v. Muth (C. A. 4, 1888), 35 F. 524.
Cramp Cure Gall Cure	medicine	L. H. Harris Drug Co. v. Stucky (C. A. 3, 1891) 46 F. 624 and Bickmore Gall Cure Co. v. Karns Mfg. (C. A. 3, 1903) 126 F. 573 (respectively).
Med-I-Pak	vaginal suppositories	Personal Products Corporation v. Allen Laboratories (C. C. P. A. 1944) 141 F. 2d 702, 61 USPQ 187.
Aseptikons	vaginal suppositories	Parmele Pharmical Co. v. Weiner (D. C. N.Y. 1925) 5 F. 2d 750.
Shredded Wheat	breakfast cereals	Kellogg Co. v. National Biscuit Co., 305 U. S. 111, 39 USPQ 296.
Toasted Corn Flakes	breakfast cereals	Kellogg Toasted Corn Flake Co. v. Quaker Oats Co. (C. A. 6, 1916) 235 F. 657.
Raisin Bran	breakfast cereals	Skinner Mfg. Co. v. Kellogg Sales Co. (C. A. 8, 1944), 143 F. 2d 895, 62 USPQ 324.
Frostee	frozen fruits and vegetables	Thomas J. Lipton v. Lerman (D. C. D. C. 1952) 107 F. Supp. 835, 95 USPQ 310.
Graphic	cameras	Folmer Graflex Corp. v. Graphic Photo Service (D. C. Mass. 1942) 14 F. Supp. 429, 53 USPQ 287.
Realistic	hair waving machine	Philad Co. v. Murray's Beauty Salon (D. C. Ohio, 1936) 14 F. Supp. 626, 29 USPQ 228.
Lather-Kreem	shaving cream	A. J. Krank Mfg. Co. v. Pabst (C. A. 6, 1921) 277 F. 15.

WHAT'S NEW WITH COLTON?

...THERE'S THE 124, 126, 128 and 132 (left) MULTIPLE LIQUID FILLER with ROTARY INDEXING TABLE; runs all sizes containers up to 4 fl. oz.; round, oval, rectangular, plastic or glass. Adapts to any standard conveyor belt. Fully automatic. Single rev. clutch for no-container-no-fill: no overfill, no waste, no drip. Quick, easy cleaning. Four to twelve nozzles; 32 to 480 fills per minute.



... THERE'S THE 113 (above) COMBINATION LIQUID and PASTE FILLER, CLOSER and CRIMPER with EJECTOR; the first FINE QUALITY, LOW-PRICED machine with extreme versatility in filling liquids, creams, pastes. Traditional Colton accuracy of fill and dependability of operation. Fills liquids automatically at 40 tubes and pastes semi-automatically at 20-30 tubes a minute. Furnished with angle nozzle for filling heavy creams and pastes without trapping air.



... THERE'S THE 180 (above) AUTOMATIC TUBE FILLER, CLOSER AND SEALER with the new HEAT SEALING HEAD which means that this famous high-production, high versatility machine now handles both collapsible metal and plastic tubes. Single, 55 tubes, Twin, 100 tubes a minute. Many accessories available.

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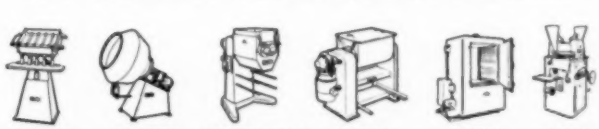

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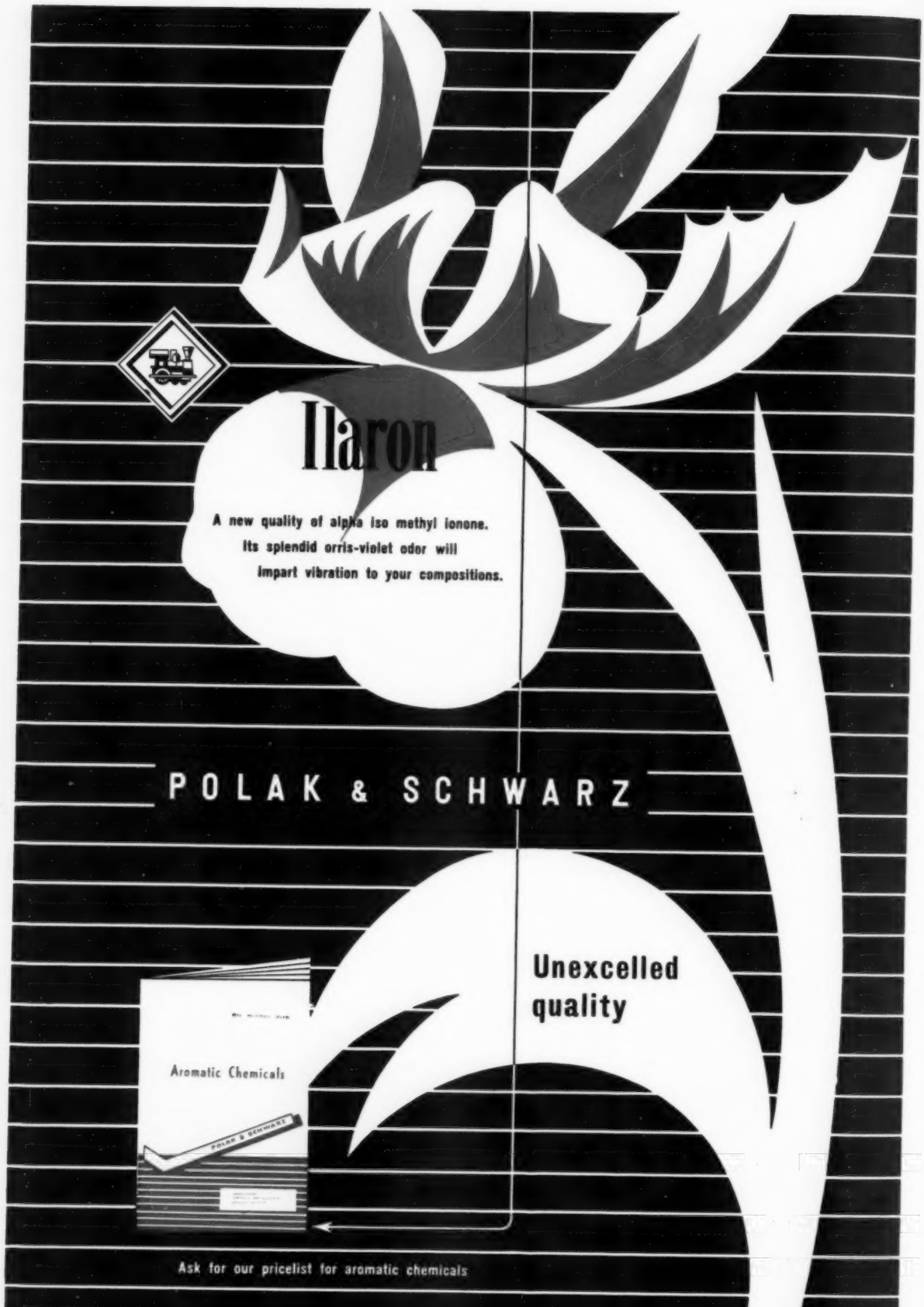

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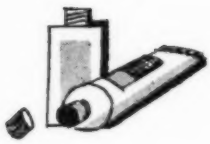

Advancing Therapy

Sodium Propionate + Chlorophyll Wet Dressing

According to R. O. Noojin, L. S. Osment and C. D. Taylor (*Amer. Pract. & Digest. of Treat.* 5:186, 1954) both chlorophyllin and sodium propionate have been shown to possess bacteriostatic and fungistatic properties. After combining the two substances, these features are still retained. In their investigations a total of 170 patients with various exudative dermatoses have been treated by the local use of sodium propionate-chlorophyllin in the form of wet dressings. The preparation used was a powder consisting of 99.75 per cent sodium propionate and 0.25 per cent sodium copper chlorophyllin. Packages containing 2.3 Gm. of the powder were furnished the patient with the request that it be dissolved in one pint of warm water.

From the use of this adjuvant type of treatment, 87.06 per cent of these patients derived decided benefit. Some 7.65 per cent were not improved by its use, and 5.29 per cent were affected unfavorably by the preparation. No evidence of epidermal sensitivity to the substance was noted in any patient. The sodium propionate-chlorophyllin preparation was found invariably to be acceptable to the patient from the standpoint of not staining, not being messy, or possessing other undesirable qualities. When used around the eyes or genitalia, it did not appear to be irritating to the mucous membranes. Increasing the strength of the concentration by as much as 100 per cent, or decreasing it by as much as 50 per cent, did not, in those patients treated, appear to alter appreciably the results obtained. In the majority of cases, the patients were treated with a solution containing 2.3 Gm. of the powder in one pint of water. The patients were allowed to use either warm or cool water in order that they might determine themselves which was the more soothing.

From this investigation it appears that sodium propionate-chlorophyllin is a valuable adjunct when used as a wet dressing for a number of dermatoses. It perhaps comes closer than any other agent to having all the qualities desired of a substance which is to be used in a wet dressing. For the acute dermatoses like acute contact dermatitis, its healing effect was notable. For the chronic dermatoses, as neurodermatitis, the local soothing effect was in most patients very satisfactory.

Vitamin B_{12} by Inhalation

The advantages of administering vitamin B_{12} by inhalation in the treatment of pernicious anemia have been demonstrated in American and British investigations. The American report, by R. W. Monto and J. W. Rebuck (*Arch. Int. Med.* 93:219, 1954) contains the results of treatment of 12 patients with pernicious anemia in relapse by both inhalation and nasal instillation of crystalline vitamin B_{12}. Twenty patients with pernicious anemia in remission were treated by these techniques for varying periods up to 18 months. Crystalline vitamin B_{12} in isotonic sodium chloride solution without a preservative was utilized for aerosol inhalation and nasal instillation. Maximum hemopoietic effect was elicited with a solution containing 100 mcg. per ml., although in these observations the concentrations employed varied from 15 to 200 mcg. per milliliter. One thousand micrograms of vitamin B_{12} and 0.1 ml. by volume of lactose powder was used for administration as a dust. Nasal instillation was performed in 0.5 ml. volume divided between the two nostrils and given in the usual manner of nasal liquid medicaments. Inhalation and nasal instillation of crystalline vitamin B_{12} in isotonic sodium chloride solution or lactose powder produced no evidence of toxicity or sensitivity at the local site. Satisfactory hematological and clinical results were obtained. Detectable amounts of a growth substance like vitamin B_{12} in the urine were found after pulmonary administration and nasal instillation of this substance. This simple form of therapy is not only effective, but safe and economical in the opinion of Monto and Rebuck.

A similar conclusion was reached by M. C. G. Israels and S. Schubert (*Lancet* 1:341, 1954) who used vitamin B_{12} in the form of snuff for insufflation for patients with pernicious anemia. They found it to be an effective form of treatment, and the doses required are of the same order as those given by the intramuscular route. It is relatively inexpensive. They feel that vitamin B_{12} snuff is a useful alternative to intramuscular injection for suitable patients.

Tetracycline for Pneumonia in Children

The antibiotic, tetracycline, was employed by M. Glatt and S. Ross (*Antibiot. & Chemother.* 4:395, 1954) in the treatment of 12 cases of bacterial pneumonia in infants and children. The results were considered good in 9 cases and fair in three cases. Ten of the 12 patients were afebrile within 48 hours after initiation of therapy. The remaining two cases were afebrile within 72 hours. Tetracycline was given orally in all cases in a dosage computed on the basis of 20 milligrams per kilogram per 24 hours in a six-hour divided dosage schedule. No untoward reactions were observed in this series. It was the investigators' impression from this small group of patients that the response to tetracycline closely paralleled that observed when cases of bacterial pneumonia in children were treated with either chlortetracycline or oxytetracycline.

Chlorpromazine in Neuropsychiatry

A study was made by N. W. Winkelman, Jr. (*J.A.M.A.* 155:18, 1954) to assess the usefulness of a new drug, chlorpromazine which chemically is 10-(*v* - diethylaminopropyl) - 2 - chlorophenothiazine hydrochloride, in relieving increased psychomotor activity seen in tension and anxiety states, mild to severe agitation, and hypomanic and manic behavior, as well as its usefulness in treating patients with delusions, hallucinations, and various obsessive-compulsive-phobic conditions. It was also given to patients with epilepsy and paralysis agitans.

From the results obtained with 142 patients receiving the drug for two to eight months, Winkelman is of the opinion that chlorpormazine has a definite place in the treatment of neuro-

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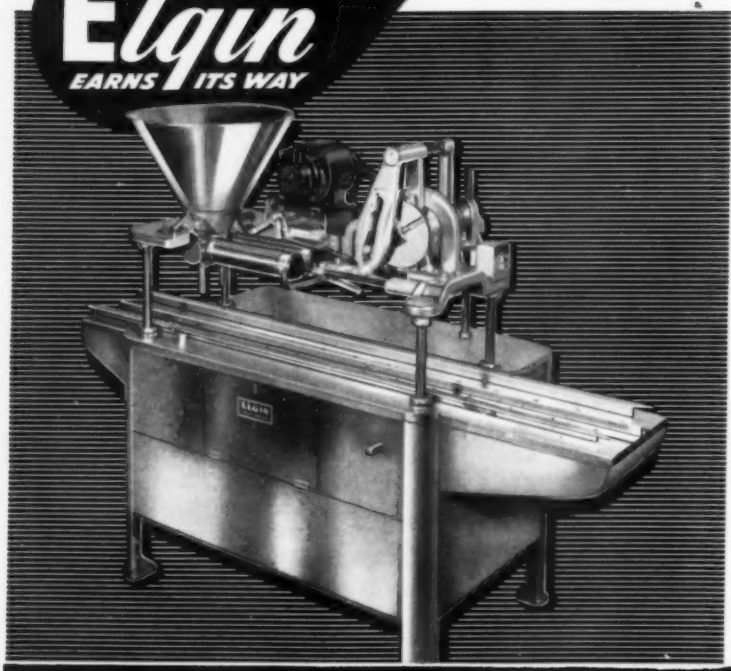

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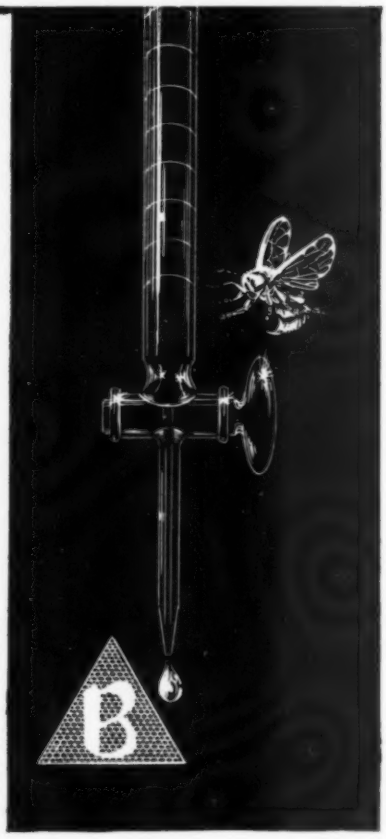

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psychiatric patients, both by the general practitioner and by the psychiatrist. Chlorpromazine should not be considered merely a chemical restraint that has no real effect on the patient's illness. On the other hand, it cannot be used as a panacea for all psychiatric ills. Although it should never be given as a substitute for analytically oriented psychotherapy, it must be considered a true therapeutic agent with definite indications. The drug is especially remarkable in that it can reduce severe anxiety, diminish phobias and obsessions, reverse or modify a paranoid psychosis, quiet manic or extremely agitated patients, and change the hostile, agitated, senile patient into a quiet, easily managed patient.

Glutamyl Polypeptide As Blood Expander

Work by M. Bovarnich, M. Kessler and D. O'Connell (through *Chem. & Eng. News* 32:1999, 1954) suggests that crosslinked glutamyl polypeptide shows promise as an expander of blood plasma volume. Animal tests and preliminary clinical tests indicate it causes the desired expansion of plasma when injected intravenously. It remains in the blood for a suitable length of time. Thus far, no adverse effects have been observed in the body. The material is said to have the following advantages: it can be sterilized by autoclaving, it does not gel at freezing temperatures, and it can be stored without loss of potency almost indefinitely, either in dry state or in solution.

Starting material for the expander is a simple straight chain peptide obtained by growing *Bacillus subtilis* in a suitable medium. Because they were excreted from the blood too rapidly, molecules had to be made bulkier. This was done by the development of crosslinked glutamyl polypeptide.

Topical Hydrocortisone in Dermatology

On the basis of information obtained from a study of several hundred patients with selected dermatoses, C. R. Rein (*Merck Report* 63:20, April 1954) reports that the topical hydrocortisone and hydrocortisone acetate preparations are a valuable adjunct in the treatment of atopic dermatitis, lichen chronicus simplex, anogenital pruritus, dermatitis venenata, and nummular eczema. The 2.5 per cent concentrations are more effective than the 1.0 and 0.1 per cent preparations, but the differences in effect are not proportionate to the increase in concentrations. Concentrations as low as 0.1 per cent in a lotion vehicle have been found to be effective in many patients. Hydrocortisone (free alcohol) preparations appear to be of equal therapeutic value as compared to the hydrocortisone acetate ointments. The ointment and lotion vehicles appear preferable to the jellies.

The addition of broad-spectrum antibiotics did not appear to enhance the anti-eczematous effect of the hydrocortisone or hydrocortisone acetate ointments.

From these preliminary studies, there is no available evidence of absorption of the hydrocortisone acetate through the epidermis. There were no instances of proved allergic contact sensitization to hydrocortisone acetate.

Penicillin for Acute Pharyngitis

The report of H. A. Feldman, S. H. Bernstein and H. B. Williams (*J.A.M.A.*155:109, 1954) indicates the value of penicillin in the treatment of acute pharyngitis. They state that a single 2 ml. injection of a new penicillin combination, Panbiotic, containing 300,000 units of potassium penicillin G, 300,000 units of procaine penicillin G and 600,000 units of benzathine penicillin G (DBED) was used to treat 42 cases of proved micrococcic (streptococcic) pharyngitis and 11 cases of scarlet fever with negative throat cultures. There was one instance (2.4 per cent) of bacteriological relapse in the group with positive cultures. One patient had a mild sensitivity reaction. Among 33 persons with proved micrococcic pharyngitis receiving five daily injections of 600,000 units of procaine penicillin G, there were five (15.2 per cent) bacteriological recurrences. There were five additional patients with negative cultures and scarlet fever who were also on this regimen. There were no sensitivity reactions in this group.

Feldman and his colleagues believe that because of its effectiveness in rapidly controlling the clinical signs and bacteriological findings of acute micrococcic pharyngitis, the low relapse rate, the lack of local irritation, and the ease with which the single injection may be administered, this penicillin mixture is suited admirably for the treatment of micrococcic pharyngitis. For the same reason, it should be effective in the prevention of subsequent complications such as acute rheumatic fever and possibly acute glomerulonephritis. It should be most helpful in diminishing the spread of group A micrococci to other members of the family unit.

Cortisone vs. Aspirin in Arthritis

A special report in the *British Medical Journal* (1:1223, 1954) gives the results of a comparison of cortisone and aspirin in the treatment of early cases of rheumatoid arthritis. In this study, 61 patients in the early stages of rheumatoid arthritis, and regarded as suitable for treatment with either cortisone or aspirin, have been allocated at random to treatment with one or other agent (cortisone 30 cases, aspirin 31 cases). Two comparable groups of these early cases were thus constructed and have now been treated and observed for one year. For most of the year treatment was "individualized" by the physician in charge of the patient at a level sufficient to restore maximal functional efficiency without producing serious side-effects.

Observations made one week, eight weeks, thirteen weeks, and approximately one year after the start of treatment reveal that the two groups have run a closely parallel course in nearly all the recorded characteristics — namely, joint tenderness, range of movement in the wrist, strength of grip, tests of dexterity of hand and foot, and clinical judgments of the activity of the disease and of the patient's functional capacity. The hemoglobin level and blood sedimentation rate were slightly more favorably influenced by cortisone, but in no other respect do the two groups differ materially. On each form of treatment the disease was judged at the end of one year to be inactive, or only slightly active, in about three-quarters of the patients, and on each treatment some two - fifths of the patients were regarded as capable of normal work and activity. For practical purposes, therefore, there appears to have been surprisingly little to choose between cortisone and aspirin in the management of these 61 patients in the early stages of rheumatoid arthritis.

In an editorial comment (p. 1249) on this study, it was observed that if further experience confirms the view that most cases of rheumatoid arthritis can be treated as effectively and more safely with aspirin than with cortisone, larger quantities of cortisone will be available for the maintenance therapy of other conditions.

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Compounder's Corner

Bubbling Bath

According to a note in the *Bulletin of the American Society of Hospital Pharmacies* (11:63, 1954), a bubbling bath can be made from:

Sodium lauryl sulfate	**35 Gm.**
Sodium sesquicarbonate	**63 Gm.**
Sodium alginate N.F.	**2 Gm.**

The mixed powders may be colored andperfumed, as desired.

Shampoos

In a discussion of the chemistry of hair shampoos, J. L. Stoves (*Perf. & Essent. Oil Rec.* 45:26, 1954) observes that the older types of shampoo based on soap suffer from the disadvantage that when used in hard water insoluble calcium soaps are precipitated as a scum which tends to adhere to the hair. Such surface deposits diminish gloss and may, under certain conditions, also render more difficult the removal of epithelial cells normally shed by the scalp. Soap shampoos therefore should contain a sequestering agent such as sodium hexametaphosphate which forms a complex ion with calcium, so preventing precipitation of insoluble soap. For general purposes two to three per cent of sequestering agent calculated on the weight of soap is adequate. The sodium salt of ethylenediamine tetra-acetic acid also masks calcium, barium, magnesium and iron ions in aqueous solutions.

Because of the absence of excessive degreasing and freedom from scalp irritation, soap shampoos still have their devotees and when formulated so as to prevent scum formation there is much to be said in their favor. It should be noted, however, that on dissolving soap in water hydrolysis occurs and the solution becomes definitely alkaline, pH 10-10.5. Repeated cleansing of hair with such an alkaline solution may give rise to damage if the hair is not thoroughly rinsed with water before being dried. Nevertheless, it is important to realize that an alkaline pH is not the sole factor in determining damage and the presence of appreciable concentrations of free alkali is more important. Good quality soaps are free from this latter defect. The use of lemon juice or dilute vinegar rinses reduces the risk of alkali degradation. An acid rinse can be made from:

Citric acid	**10 parts**
Tartaric acid	**10 "**
Alcohol	**40 "**
Water to make	**100 "**
Perfume and color	**Sufficient**

The acids are dissolved in hot water, cooled, and the perfume dissolved in alcohol added. After standing for one week the solution is filtered.

Stoves points out that the simple soap shampoo has been largely replaced by the so-called "soapless" type based on synthetic detergents. These are of three main groups, namely, the anionic, cationic and non-ionic. All these classes of compounds are able to cleanse in hard water, and detergency is not appreciably diminished by the presence of calcium or magnesium salts, while many can lather in acid as well as alkaline solution, and are unaffected by salt.

One of the earlier types was based on sulfated oils. Sulfated castor and sulfated olive oils are good detergents and have been used together, since while the former is too sticky, the latter lacks body. These materials are potent degreasing agents which tend to leave the hair lustreless. For this reason they have been formulated with a mineral oil content of four per cent. This type of product suffers from the serious disadvantage of being non-foaming, and although detergency is not dependent on the formation of a dense lather, foaming continues to be a sales requirement of great psychological importance. As a result, sulfated oils have been largely superceded by the more highly foaming fatty alcohol sulfates.

Sulfated fatty alcohols constitute an important group of shampoo chemicals which in certain physical properties behave similarly to the corresponding fatty acid soaps. Sodium lauryl sulfate is ideal for shampoos because of its mild detergency coupled with copious foaming at low temperatures. Sodium lauryl sulfate is only soluble in cold water to the extent of one to two per cent, and hence is not satisfactory for the manufacture of liquid shampoos. As a solid it is usually formulated as one part detergent to four of filler, materials such as powdered anhydrous Epsom salt or powdered anhydrous sodium sulfate being used to give bulk. Liquid shampoos can be based on triethanolamine lauryl sulfate, which in concentrated aqueous solution is a viscous brown liquid.

Improved Suntan Cream

As a result of his efforts to improve the sun cream of the National Formulary, E. R. Hammarlund (*J. Am. Pharm. Assoc.*, Pract. Ed. 15:226, 1954) has developed the following formula and method of manufacture for such a product:

Ethyl aminobenzoate	**30.0 parts**
Stearic acid	**63.0 "**
Triethanolamine	**8.0 "**
Stearyl alcohol	**15.0 "**
Carbowax 1540	**30.0 "**
Titanium dioxide	**10.0 "**
Neocalamine	**10.0 "**
Brown ferric oxide	**1.5 "**
Methylparaben	**2.0 "**
Coumarin	**0.5 part**
Glycerine	**100.0 parts**
Distilled water, to make	**1000.0 "**

Warm the triethanolamine and the stearic acid together on a water bath for ten minutes, add the Carbowax 1540 and the stearyl alcohol and continue heating until completely melted. Dissolve the ethyl aminobenzoate and the coumarin in this mixture. Add the finely powdered titanium dioxide, neocalamine, and brown ferric oxide and mix well with continued heating. Dissolve the methylparaben in the water and glycerine mixture which has previously been heated to about 80°. Slowly add this hot aqueous solution to the melted ingredients with constant stirring. Discontinue heating but continue the stirring until the emulsion formed has an ointment-like consistency.

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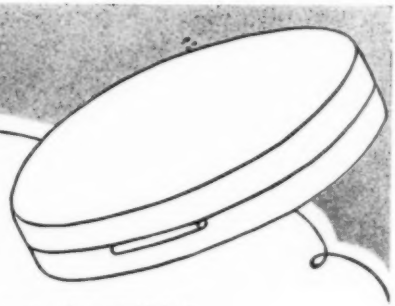

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sunscreening ability; better local anesthetic properties; better consistency; more desirable color, odor, and *p*H; and has greater stability. It is the opinion of Hammarlund and also of many who have used the improved suntan cream under actual midsummer suntanning conditions, that the product is superior in every respect to the official cream.

Deodorant Cream

According to a note in the *Bulletin of the American Society of Hospital Pharmacists* (11:130, 1954) an effective, nonirritating deodorant cream may be prepared by the following formula:

Glyceryl monostearate (acid emulsifying)	**150.0 Gm.**
Propylene glycol	**30.0 cc.**
Spermaceti	**50.0 Gm.**
Methylparasept	**1.0 Gm.**
Distilled water	**550.0 cc.**
Titanium dioxide	**20.0 Gm.**
Aluminum sulfocarbolate	**150.0 Gm.**
Boric acid powder	**50.0 Gm.**

Heat the acid glyceryl monostearate, propylene glycol, spermaceti, methylparasept, and distilled water together, gradually raising the temperature, not exceeding 85° C., until all ingredients are melted. Stir until cool. Add the titanium dioxide, aluminum sulfocarbolate, and the boric acid. Mix thoroughly on an ointment slab. Allow the ointment to stand overnight before milling.

Improved Cacao Syrup

According to G. Narinian, L. M. Ohmart and M. J. Stoklosa (*J. Am. Pharm. Assoc.*, Pract. Ed. 15:97, 1954) cacao has followed a wave of increasing and then decreasing popularity for the masking of unpleasant tastes because of the instability of the official syrup. Consequently, the full possibilities of a chocolate-flavored vehicle have not been realized. Cacao syrup prepared by the official recipe exhibits a tendency to ferment readily and to increase in viscosity upon standing for several days to such an extent that it cannot be poured from the bottles commonly used in dispensing prescriptions. Such a syrup has limitations in pharmaceutical compounding, especially when it is to be used as a suspending medium for dry powders, which tend of themselves to increase the viscosity of the preparation.

The investigation of Narinian and his colleagues was begun in an attempt to formulate an improved syrup for use as a pharmaceutical vehicle. Following studies on six formulations, the following formula was suggested for further investigation and possible adoption:

Cacao	**180.0 parts**
Sucrose	**60.00 "**
Glycose	**180.0 "**
Glycerine	**50.0 "**
Sodium chloride	**2.0 "**
Vanillin	**0.2 part**
Sodium benzoate	**1.0 "**
Distilled water, to make	**1000.0 parts**

Mix the sucrose and the cacao intimately and to this mixture gradually add a solution of the glucose, glycerine, sodium chloride, vanillin, and sodium benzoate in 325 cc. of hot distilled water. Bring the entire mixture to a boil and maintain at boiling temperature for three minutes. Allow the product to cool to room temperature, and add sufficient distilled water to make the product measure 1,000 cc.

Vanishing Cream Ointment Base

According to a note in the *Journal of the American Pharmaceutical Association* (Pract. Pharm. Ed. 15:200, 1954) the following formula yields a pearly type vanishing cream which may be used for the extemporaneous preparation of dermatologic prescriptions:

A. Polyethylene glycol 200 distearate	**3.5 parts**
Triethanolamine	**0.7 part**
Glycerine	**1.7 parts**
Water	**77.7 "**
B. Stearic acid XXX	**13.4 "**
Mineral oil 65/75	**2.0 "**
Butyl stearate	**1.0 part**
Preservative	**0.1 "**

Heat separately the ingredients under A and B to 70° C. Add A slowly to B, stirring continuously. Stir to below 35° C. Add perfume to suit. Cream may be packed at 30° to 35° C. Avoid rapid stirring.

Kapok as a Face Powder Ingredient

As is pointed out by B. S. Varma (*Soap, Perf. & Cosmetics* 27:505, 1954), kapok is the fine, soft, lustrous material obtained from the seed hairs of *Eriodendron anfractuosum* and *Bombax malabaricum*. The latter variety is found in India, and it is called Indian kapok. Kapok has long been used in stuffing pillows, mattresses, cushions and similar articles. Kapok contains 61 to 64 per cent of cellulose and is composed of straight, non-adherent fibres, slippery and fluffy in nature. These latter qualities are much valued in face powders. Hence, Varma set out to determine whether kapok could be powdered finely without losing these qualities, thus making it suitable for use as a base for face powders, in conjunction with the usual mineral bases like precipitated chalk, prepared kaolin and talc.

He points out that covering power in face powders is enhanced by the use of kaolin, zinc and titanium oxides. Kapok powder is several times lighter than any of these materials and, therefore, has a far higher spreading power per unit weight. Its actual covering or masking power has not so far been determined, although it is quite considerable.

To counteract the facial shininess due to perspiration, an ingredient such as rice starch, which is an absorbent, is incorporated. But in most of the modern types of face powder, its use has been largely replaced by other mineral bases such as precipitated chalk and the like. The absorbency of kapok powder, as shown below, is very much higher than that of precipitated chalk, and it may, therefore, prove to be a valuable constituent of face powders:

Water Absorption (w/w)	
Kapok powder	**1 to 10**
Chalk	**1 to 0.9**
Talc	**1 to 0.3**
Kaolin	**1 to 0.4**

For adherence, as well as for imparting a velvety softness to the skin, the substances hitherto in use have been the stearates of zinc and magnesium. Recently, powdered silk has been introduced as a new raw material for this purpose. Powdered kapok behaves similarly to silk powder: it spreads easily, adheres tenaciously to the skin, produces a velvety matt surface, and should, therefore, be useful as a face powder base. Kapok powder has a buff color, fine texture and is capable of being intimately admixed with other bases, if so desired. It can also take up any color and fragrance.

Since bulking fluffiness or apparent density of face powder materials is an important characteristic, Varma has determined the comparative bulking properties of treated kapok powder and compared it with the more conventional ingredients, as follows:

Bulk Test (c.c. per gram)	
Kapok powder	**7.8**
Chalk	**2.5**
Talc	**1.5**
Kaolin	**1.5**

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Industrial Odor Washing

It is pointed out in the April, 1954, issue of *Industrial and Engineering Chemistry* that while unpleasant odors from industrial processes have been around for centuries, public reaction to air pollution has created a problem only during the past few years. It is noted that most objectionable industrial odors can be cleaned up, often entirely, by redesigning processes, insisting on higher quality raw materials, or by installing scrubbers, chlorinators, flash tanks, or other means of destroying the odorous material. Unfortunately, these methods of odor control may be prohibitively expensive, or impractical because of time or space limitations. A reasonable expedient is the use of aromatic masking agents, either overpowering the offensive smell with a pleasant scent or reducing it to subthreshold intensity by the addition of other materials.

There are two general methods of attack in solving odor problems with masking agents. Where the smell is so strong that it cannot be counteracted by blending to a practical absence of odor, it is simply a problem of most efficiently and economically overpowering it with another, more pleasant smell with the same rate of diffusion as the objectionable substance, but stronger odorous characteristics. This is almost always the case where high concentrations of the various mercaptans are the odor source, as in lube oil and paper manufacture. The offensive odor is not removed but is replaced by one that may be bearable.

Every company supplying industrial odor-masking agents maintains a laboratory where chemical, physical, and organoleptic properties of raw materials are carefully checked. Actual manufacture is largely a problem of expert formulation. If the odor can be identified, and especially if it has been encountered before, the number of possible masking blends is narrowed. Where odors are of medium or low intensity, it is often possible to blend them with other volatile materials, to produce a pleasant odor of low intensity or no noticeable odor at all. As a result of many years of experience, perfumers are aware that certain odors seem to interact to give a resultant apparent lack of odor. Other odors, extremely noxious in themselves, can be combined with such substances as essential oils to create a final scent that is very easy to take. Civet, indole, and musk, all disgusting odors, when formulated in the proper manner with the necessary ingredients are basic to some of the most expensive perfumes.

Perfume chemists have analyzed many common odors, isolated some of their constituents, and synthesized close duplications of some of the essential oils and perfumes. This backlog of information is now being applied to the solution of air pollution problems. If it is known that the source of an odor is a ketone, for instance, it may be possible to use that knowledge to mask the typical ketone odor. Where the source of the odor is a liquid, the masking agent may be added directly. When it is a gas, the agent may be dripped, sprayed, or atomized into the effluent stack. Where the mask must be added to a stage of a process the effect on the process as a whole, on the masking agent, and on the product, must be considered.

It is concluded that odor masking offers a fast, convenient, economical method for dealing with industrial malodors. A minimum of equipment is needed; what equipment is necessary is compact and inexpensive. Many installations utilize paint spray guns, others design automatic units that need little or no maintenance. Elimination of the odor source is still the best solution for the problem, but masking has proved to be a valuable stopgap.

Champaca Oil

Champaca oil obtained from *Michelia Champaca* in South Orissa has been discussed by D. R. Dhingra and his colleagues (*Ather, Ole, Reichstaffe, Parfum, Essenz u. Aromen*: (99, 1953 through *Manuf. Chem.* 25:112, 1954). The oil, which is similar to the Philippine product, was obtained in a yield of 0.064 to 0.068 per cent, and had the following constants:

Specific gravity	**0.993-0.9614**
Index of refraction	**1.4925-1.4959**
Specific rotation	**−7.2°**
Acid number	**4.17-6.22**
Ester number	**64.85-71.01**
Ester number after acetylation	**120.8-129.8**

The concrete oil, obtained in a yield of 0.26 per cent by benzene extraction of the flowers, had the following properties:

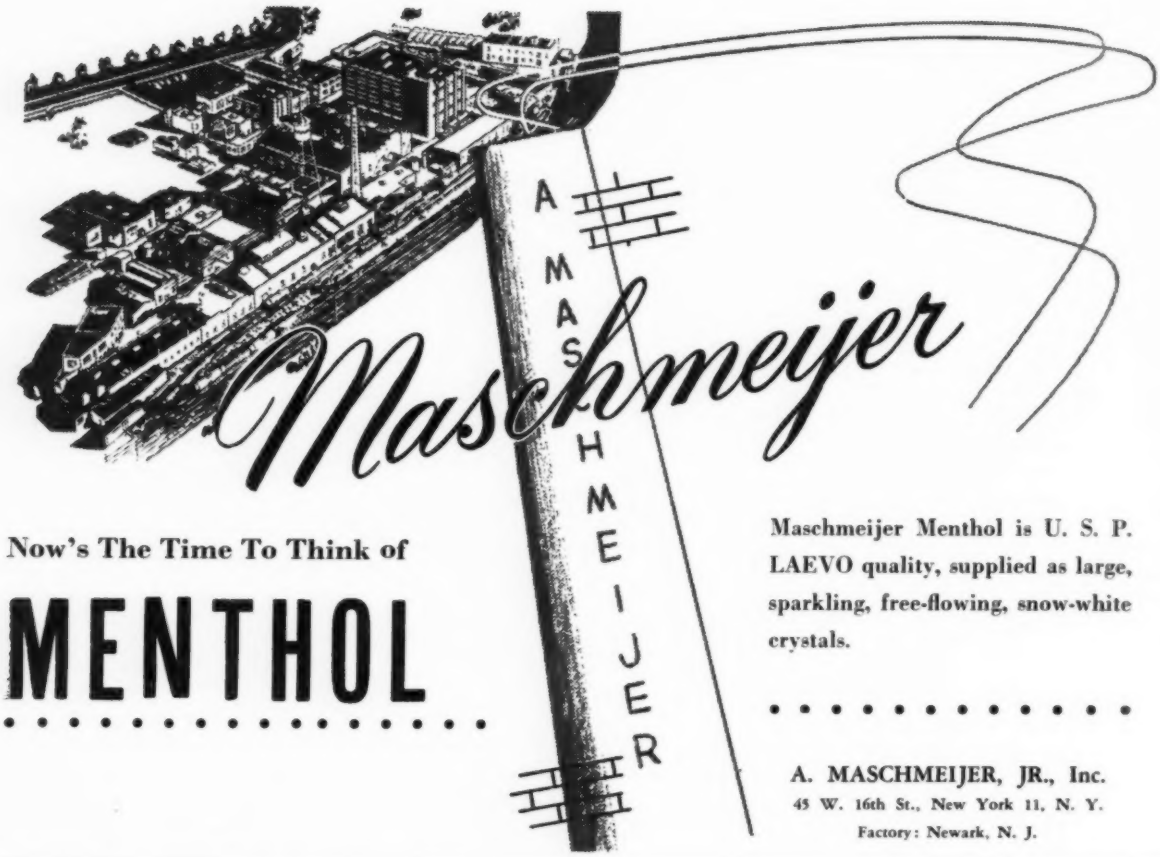
Melting point	**29°**
Solidifying point	**28°**
Acid number	**29.1**
Esternumber	**177.2**
Volatile oil content	**26.3 per cent**

Phenylethyl Alcohol

Phenylethyl alcohol, an essential basis of floral compositions as well as of certain modern perfumes, is a completely synthetic product, since it is prepared from toluene, via benzyl chloride, benzyl cyanide, phenylacetic acid and amyl phenylacetate. The manufacture of phenylethyl alcohol, including the preparation of the intermediates, has been described by F. Schmitt (*Manuf. Chem.* 25:98, 1954). In discussing the uses of this compound, he notes that phenylethyl alcohol is present in all rose oils. It perfumes the dry flower, and it is mainly responsible for the odor of rose water. It is very stable to alkalies. With phenyl isocyanate it forms a phenylurethane melting at 80° C. It oxidizes to benzoic acid. It combines directly with phthalic anhydride to form the acid phthalate which melts at 188°-189°. When heated with carbonate it is completely transformed into styrene. It dissolves in 3 parts of 50° alcohol.

Phenylethyl alcohol is used in many compositions such as acacia, honeysuckle, cyclamen, orange blossom, neroli, rose, linden.

Of the substances used in the synthesis of phenylethyl alcohol, the following find direct application in perfumery:



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Benzyl cyanide is used in fougere compositions. Phenylacetic acid, which forms small white needles, has a very powerful and tenacious honey scent, and is now employed in soap manufacture to impart a honeyed note. It is soluble in boiling water. The odors of methyl and ethyl phenylacetates are reminiscent of the acid but with a sweeter note.

In the pharmaceutical field ethyl phenylacetate is condensed with urea to give the hypnotic, gardenal.

Oil of Artemesia Scoparia

According to Dakshinamurti (*Indian Pharm.* 8:257, 1953) the North Indian plant *Artemesia scoparia* is famous for its beautiful odor. By steam distillation an essential oil was obtained from this plant in a yield of 0.6 per cent. This oil had the following properties:

Specific gravity	**0.9036**
Index of refraction	**1.4578**
Specific rotation	**+1° 33′**
Acid value	**7.18**
Ester value	**22.774**

By fractionation the following compounds were isolated and identified: butyraldehyde, α - pinene, furfural, methyl heptenone, 1,8-cineole, carvone, l-thujone, l-thujyl alcohol, geranyl acetate, eugenol and cadinene.

Tangerine Peel Tincture and Syrup

In the work done by W. J. Sheffield and H. O. Thompson (*J. Am. Pharm. Assoc.*, Scient. Ed. 43:181, 1954) a tangerine peel tincture was prepared by maceration of the whole peel from the fresh fruit. This procedure was adapted when it proved difficult to grate the outer peel, because of its thinness and loose attachment to the pulp. Inasmuch as the peel is easily removed and does not contain a bitter inner rind, grating of the outer peel did not appear feasible. Therefore, tinctures were prepared by maceration of the whole peel which was broken up into small pieces. In the determination of the oil content of the tinctures, an adaption of the A. O. A. C. precipitation method appeared to have a greater general accuracy than the polarization method. A tangerine syrup was prepared from the tincture, using light magnesium carbonate as the filtering agent. Organoleptic tests indicated that tangerine syrup compared favorably in taste preference with five other vehicles which had ranked high in taste preference tests conducted by other workers. Tangerine syrup also appeared to have a high value in disguising the salty taste of ammonium chloride and a mediocre value in disguising the bitter taste of quinine hydrochloride.

Oil of Amphiachyris Dracunculoides

Amphiachyris dracunculoides, say A. C. Glasser, L. E. Harris, B. V. Christensen and F. W. Bope (*J. Amer. Pharm. Assoc.*, Scient. Ed. 43:291, 1954) is one of the two species of *Amphiachyris* native to the south central portion of the United States. Local names for the plant, which is widely distributed throughout the southwest, are Broom Weed and August Flowers. The use of *Amphyiachyris dracunculoides* as a home remedy for coughs and colds was established in the southwestern part of the United States many years ago. An infusion of the flowering tops is used to make a syrup.

During the course of a phytochemical study of the plant, an essential oil was isolated and investigated. On steam distillation, the flowering tops of the plant yielded 1.6 per cent of an oil with the following properties:

Specific gravity	**0.9135**
Index of refraction	**1.4784**
Specific rotation	**—15° 36′**
Acid number	**1.06**
Ester number	**26.1**
Ester number after acetylization	**64.8**
Alcohol content, as borneol	**10.6 per cent**
Carbonyl compounds	**19.0 " "**

The oil was separated chromatographically on silicic acid into hydrocarbon and oxygenated fractions. The oil is composed of 74 per cent hydrocarbons and 26 per cent oxygenated compounds. The hydrocarbon fraction consists of the terpenes α-pinene 4.5 per cent, *l-beta*-pinene 53 per cent, *d*-limonene 24 per cent, and a sesquiterpene *l*-cadinene 18 per cent. *l*-Borneol has been isolated from the oxygenated fraction.

Abnormal Mint Oils

In a report on the abnormal composition of oils from the genus *Mentha*, G. A. Fester and E. A. Martinuzzi (*Anales asoc. quim. Argentina* 41:149, 1953) stated that oils from *Mentha piperita* have been found to contain *d*-isomenthone, which was separated and identified by its ternary semicarbazone crystals. Piperinic acid (the hydrolactone of menthofuran) was isolated by fromination and extraction with ether from the same sample. They also observed that oils from *Mentha spicata* from Misiones, Argentina, are abnormal in composition and resemble more nearly those of *Mentha pulegium*; having the same approximate specific gravity, index of refraction and specific rotation and contain 82 per cent pulegone, whereas oil of *Mentha spicata* normally contains less than 71 per cent. The abnormality is attributed to either autofecundation or hybridization with other types of *mentha spicata*.

Oxygen, Oxides and Citronella Oil

The influence of oxygen and metallic oxides on citronella oil has been studied by J. J. Zeehuisen (*J. Sci. Research Indonesia* 1:216, 1952 through *Chem. Abstr.* 48:3639, 1954). He found that zinc, zinc oxide, stannous oxide, aluminum oxide, and iron oxide all accelerated the oxidation of citronellal and geraniol, the basic ingredients present in citronella oil. Acceleration is particularly marked in the case of citronellal when allowed to stand for long periods, even in the dark, with zinc oxide. Citronella oils were affected most by zinc oxide, less by iron oxide, and comparatively little by stannous oxide and aluminum oxide. The geraniol content of the oils increased when they were kept in contact with stannous oxide or aluminum oxide in diffused daylight, whereas the geraniol content decreased when kept in the dark.

British Essential Oil Tests

According to a note in *The Chemical Age* (70:320, 1954) the British Standards Institution has published BS. 2073, "Methods of Testing Essential Oils." This describes the preparation of the oil for examination and gives methods of determination for the following: Specific gravity and apparent density, optical rotation, refractive index, freezing point and melting point, solubility in alcohol, acid value and ester value, ester after acetylation, citronellal, aldehydes other than citronellal, carbon and methone and phenols. It is hoped at a later date to issue an addendum, including some of the methods which it has not been found possible to standardize at the present time. Copies of this new standard may be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London, W.1 (4s.).

Animal Health

Phenothiazine-Salt Mixture for Sheep

An eight-year study conducted in Texas by D. A. Price, W. T. Hardy and J. B. Boughton (through *Vet. Med* 49: 198, 1954) indicates that the large stomach worm, *Haemonchus contortus*, of sheep can be controlled satisfactorily through the continued use of 1:9 phenothiazine-salt mixture supplied free-choice as the method of treatment. No evidence of toxicity was observed during these extended experiments. Many of the animals in the treated flock attained the age of six to eight years before being marketed and never had received any salt except that contained in the mixture. Rate of consumption was noted to be slightly less than one-third of a pound per month, varying from month to month and from year to year. Variations in amounts consumed were attributed to the presence, each year, of growing lambs in pastures and to annual rainfall of the region.

Comparison of worm-egg counts in the treated and untreated flocks, larval development in feces, and actual worm counts at autopsy indicates that the 1:9 phenothiazine-salt mixture satisfactorily controlled stomach worm infection in range sheep under management practices as applied in the region. These findings may be applicable to similar arid areas but may need to be modified under varying climatic conditions, particularly greater rainfall.

Formalin for Diarrhea in Horses and Cattle

It is pointed out by J. B. Aranez (*J. Am. Vet. Med. Assoc.* 124:389, 1954) that some gastrontestinal diseases in equine and bovine animals are characterized mainly by copious and frequent loose evacuation of the bowels. This must be checked, otherwise pronounced emaciation and weakness will proceed rapidly and may result in death. In a new approach to the treatment of this diarrhea, Aranez administered formalin to five effected animals. In his limited study a 25 to 30cc. dose of a 10 per cent solution of official formalin given intravenously was found to be a rapid and effective treatment for dietetic gastroenteritis in 4 horses, as was 40 cc. for a carabao with similar symptoms. The therapeutic effect apparently was due to the antiseptic, astringent, and antifermentative properties of the solution. The animals were rested, feed was withheld, and the pasture was changed, but no other internal medication was administered. No harmful effects were observed after the intravenous injections of the formalin solution.

Antibiotic Combinations for Bovine Mastitis

The relative efficacy of three antibiotic combinations has been investigated by F. Vigue (*J. Am. Vet. Mec. Assoc.* 124:377, 1954) for the treatment of bovine mastitis. Three therapeutic preparations were used. One contained neomycin sulfate, 200 mg. and penicillin G potassium, 200,000 units; another contained neomycin sulfate, 200 mg., and bacitracin, 5,000 units; the third contained neomycin sulfate, 200 mg., bacitracin, 2,000 units, and penicillin G potassium, 100,000 units. All preparations were made up in 3.5-Gm. tubes, incorporating a water - milk - miscible vehicle of two per cent aluminum monostearate in peanut oil.

From the data obtained in this test, it was apparent that the neomycin-penicillin combination was most effective, clearing up 18 of 19 (94.7 per cent) infected quarters. The neomycin-bacitracin-penicillin combination was second in order of effectiveness, clearing up seven of ten (70.0 per cent) infected quarters. Neomycin-bacitracin was least effective, clearing up only four of 15 (26.6 per cent) infected quarters. Of four cases in which mixed bacterial infections occurred, two cases (four quarters) were treated with neomycin-penicillin and two (five quarters) with neomycin-bacitracin. Again, neomycin-penicillin was superior, clearing up four of four (100 per cent) infected quarters, as compared to one of five (20 per cent) infected quarters cleared up by the neomycin-bacitracin combination.

Vigue feels that although it is difficult to assess values to the separate antibiotics used in this study; however, the study does suggest that penicillin was the most effective and bacitracin the least effective of the three antibiotics used.

Vitamin E in Animal Rations

Citing a report originally published in the *Feed Bag*, it is noted in the *Journal of The American Veterinary Medical Association* (124:226, 1954) that vitamin E deficiency causes muscular dystrophy in rabbits and guinea pigs, which is somewhat similar to "stiff lamb disease" and "white muscle disease" in calves. While progressive muscular dystrophy in man seems quite similar, it does not respond to vitamin E therapy. In young chickens, vitamin E deficiency produces a severe edema, especially in the brain, resulting in encephalomalacia or "crazy chick disease." However, in ducks, it produces instead a muscular dystrophy. Recent evidence indicates that in turkeys, the deficiency induces necrosis of the smooth muscle of the gizzard and an enlarged hock disorder. While this is quite similar to a field condition found in turkeys, vitamin E deficiency has not been proved to be a factor in the latter.

Vitamin E is easily destroyed by oxidation and may, by using up oxygen, protect the more resistant vitamin A and carotene from oxidation. And since the oxidation of vitamin E is speeded by certain unsaturated fatty acids and minerals, the additions of high levels of cod liver oil or lard to rations may abruptly produce a vitamin E deficiency and encephalomalacia in chickens.

Vitamin E was plentiful ten or more years ago in soybean meal but is practically all removed in recent methods of processing. Yellow corn is a good source of vitamin E except in years when it has a high moisture content or when it is allowed to ferment. The

vitamin E content of alfalfa meal varies considerably with the quality of the latter. Therefore, in some rations the addition of 3 to 6 Gm. of *alpha*-tocopherol acetate per ton of poultry ration is beneficial for chickens. A higher content may be needed for turkeys.

ACTH for Ketosis in Cattle

In trials made by W. J. Jordon (*Vet. Rec.* 66:174, 1954) with ACTH in the treatment of ketosis in cattle, the hormone was given intramuscularly in a dose of 50 mg. in sterile distilled water. A slight local inflammatory reaction appeared on the day following the injection. Many animals refused to eat and little or no improvement was noted. But by the second day appetite had returned to normal, and mild yield was sharply increased though not quite back to the level just prior to the illness. The cow lost the dull, sleepy appearance, and in most cases could not be picked out as abnormal. When first visited 11 animals were treated with ACTH alone. Seven of these had recovered by the second day. Four were given a second injection and all recovered uneventfully. Ten cows were given ACTH because response to other treatment was poor to nil, and all had recovered two days later. No undesirable reaction, apart from inappetence on the day following injection, was noticed. Subsequent history has not revealed any undesirable reaction. The

Vitamin A and X-Disease in Calves

The relationship between vitamin A and hyperkeratosis or X-desease in dairy calves has been investigated by W. G. Holkstra, R. E. Hall and P. H. Phillips (*Am. J. Vet. Res.* 15:41, 1954). Hyperkeratosis was produced by feeding toxic, commercially pelleted calf feeds obtained from farms where the disease was encountered. The factor which caused hyperkeratosis produced a severe depressing action on vitamin A concentration in the blood plasma. This antagonism appeared to be direct, since removal of the toxic factor from a ration supplemented with vitamin A resulted in a sharp increase in plasma vitamin A values.

Short-time vitamin A therapy (600,000 to 750,000 I.U. over a 9- to 12-day period) in established cases of hyperkeratoses produced a partial, usually temporary, alleviation of the hyperkeratosis syndrome. Plasma vitamin A concentrations were usually increased to normal during treatment, but this vitamin A level was seldom maintained following therapy. Supplementation with vitamin A throughout the feeding of hyperkeratosis-producing feeds resulted in greater livability or prolongation of life but did not prevent the disease syndrome or its fatal termination in severely poisoned animals. If the disease was diagnosed early before gross symptoms of hyperkeratosis were observed or if large amounts of the toxic material had not been consumed, and the toxic feed was removed, supplementation with vitamin A was beneficial.

Antibiotics for Pullorum Disease

In an experimental study on the control of pullorum disease, A. Pital, H. J. Stafseth and E. H. Lucas (*Poultry Sci.* 33:134, 1954) made *in vitro* tests which showed that *Salmonella pullorum* is sensitive to low concentrations of aureomycin and chloromycetin. This organism is also sensitive to moderately low concentrations of penicillin. The latter appears to exert a slow bactericidal action, while Aureomycin and Chloromycetin appear to be bacteriostatic. The use of proper concentrations of cobalt greatly enhanced the antibacterial action of penicillin. This was found in both *in vitro* and *in vivo* experiments. Aureomycin and Chloromycetin were effective in reducing chick mortalities resulting from artificial infection with *S. pullorum*. Penicillin also reduced mortalities, but only at relatively high concentration levels. A decided reduction in penicillin levels may eventually be realized by the combined use of cobalt and penicillin. The value of all three antibiotic agents in prevention of carriers among recovered birds, still remains to be determined.

Medicaments in Feed

In a discussion on the use and abuse of medicaments in feed, as presented at the Cornell Nutrition Conference (*through J. Am. Vet. Med. Assoc.* 124: 317, 1954) it was pointed out that medication is effective only when the diagnosis is accurate. As practiced at present, subacute intoxications occur more commonly than is recognized. Agents which are incompatible, such as para-aminobenzoic acid for chronic respiratory disease and sulfonamides for coccidiosis control, are sometimes fed simultaneously. Flowers of sulfur, sometimes used as a coccidiostatic agent, may interfere with normal bone formation in chickens and some sulfonamides may affect the calcium deposit in eggshell formation. Furthermore, such drugs may be objectionably found in poultry meats and eggs, just as antibiotic drugs, when promiscuously fed to cows, may be found in their milk.

Sows and Sex Hormones

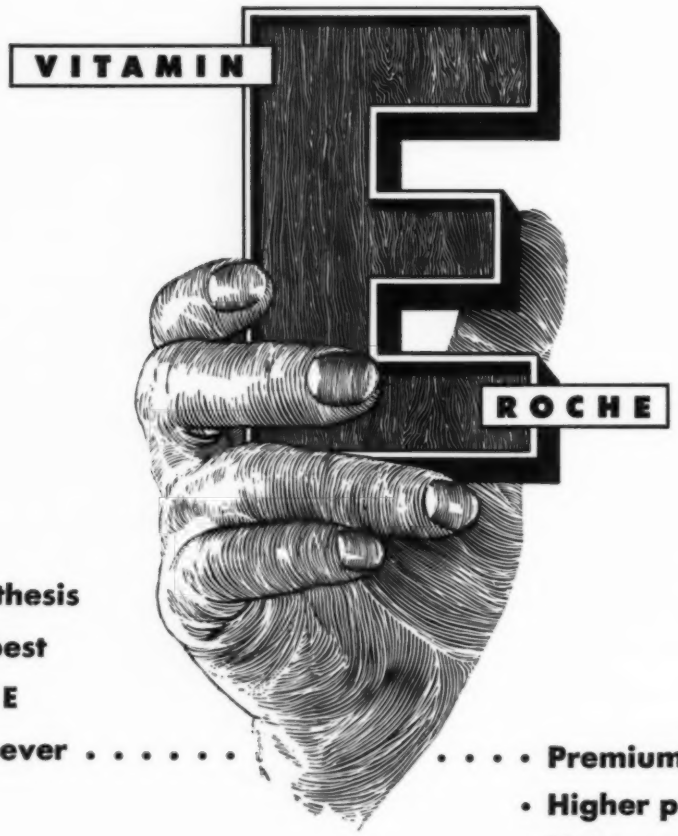
According to the *Veterinary Bulletin* for February, 1954, (through *J. Am. Vet. Med. Assoc.* 124:442, 1954), when 217 sows were given 500 I.U. of chorionic gonadotropin, 84.6 per cent developed estrus, 58 per cent became pregnant, with litters averaging 9.7. When 170 sows were given 400 to 800 I.U. of chorionic gonadotropin with an equal dose of pregnant mare serum, 95.8 per cent developed estrus, 82.2 per cent became pregnant, with litters averaging 9.9. When 5 to 30 mg. of stilbestrol was given to each of 362 sows, 65.4 per cent developed estrus, 38.3 per cent became pregnant, and litters averaged 6.2; however, in 72, estrus was thereafter irregular and 65 had no further estrus.

Drug Injections & Hen's Egg

The effects of injections of acetylcholine and ephedrine in the hen at different stages of egg formation upon certain components of the laid egg were studied by P. D. Sturkie, H. S. Weiss and R. K. Ringer (*Poultry Sci.* 33:18, 1954) these drugs had no effect upon the weight of the egg, weight of the yolk, and volume of albumen, except for the outer thin, which was decreased in two treatments with acetylcholine. They had no effect upon the per cent solids or water content of yolk or albumen, based upon refractive index. Injection of acetylcholine, which causes contraction of the oviduct, tended to decrease the width-length index of the egg, or make the egg longer. Ephedrine, which relaxes oviducal muscles, particularly those of the uterus, increased the width - length index. Acetylcholine and ephedrine, injected when the egg was in the uterus, decreased the percentage of shell.

Acetylcholine had no effect upon the viscosity of the thick albumen, but it increased the viscosity of the outer thin albumen in most cases, and, in some instances, that of the inner thin.

Ephedrine tended to decrease the viscosity of the middle thick, but had no effect on the viscosity of thin albumen. Thus, ephedrine tends to make thick albumen thinner, and acetylcholine makes thin albumen thicker.



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*Nature; Vol. 148; October 18, 1941; pages 472-3. Reprints available.

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Abreast of the Markets

Mercury Remains High

The price of quicksilver remained at $293.00 a flask last month, the highest level at which the metal has been priced since the end of the second world war. This record high level has been maintained as a result of the government's intensive stockpiling. However, plans have been announced which indicate the United States will soon establish a ceiling on the metal, from domestic and Mexican sources, and over a period of time will purchase 200,000 flasks at the lower ceiling price.

This plan is expected to go into effect within the next few months, and if it does, will help bring the price of the metal down to a more reasonable level.

As far as the mercurial are concerned, there have been no recent price changes. However, these salts may be advanced to offset the $293 value of the mercury, if the latter does not drop in price within the next few months.

Essential Oils on Quiet Side

There was not much activity in the essential oil market last month, price-wise, as is the rule during the mid-summer months. A few notable changes did occur however. Chinese anise oil has been just about crossed off the dealers' lists, with some quoting the Russian material in its place. In citronella oil, the recent civil war in Guatemala seems to be having its effect, with some sources expecting no oil from that country during this year.

In the citrus oils, demand has increased greatly with the warm weather, but this has been more than offset, in the case of lemon oil, with an abundant supply. A well-balanced lemon-oil market is looked for in the next few months.

Anise Oil Very Scarce

With Chinese anise oil virtually unobtainable on the spot market, and replacements equally as difficult to find, most essential oil houses do not even bother to quote a price on the item. Some sources, however, have indicated they are selling Russian rectified U.S.P. anise oil, with the price set at $3.75 a pound.

Bois de Rose Oil Unchanged

There are sufficient stocks of bois de rose oil available to handle all needs. The price last month remained in the range between $4.10 and $4.85 a pound.

Cedarwood Oil Tighter

A firmness is developing in cedarwood oil chiefly because dealers are finding it very difficult to obtain replacements. Most of the oil on the spot market is spoken for and consequently, the essential oil houses are not able to satisfy many customers outside of their regular ones. The price by the end of July ranged from $1.20 to $1.30.

Citronella Oil in Difficulty

Both the Ceylon and Java types of citronella oil advanced last month to 90 cents and $1.00, respectively. The general feeling is that the market will continue to advance for some time to come. There is said to be a rather limited supply of oil in Formosa and this, coupled with the recent uprising in Guatemala, has put heavy restrictions on the supply picture. In some quarters, very little, if any, oil is expected this year from Central America owing to the internal disturbance of Guatemala.

Clove Oil Reduced

The price of clove bud oil was lower last month, having been quoted between $3.75 and $4 a pound. The leaf oil, which was selling at about $1.80, appeared to be in a rather firm position, with little relief expected for the balance of this year.

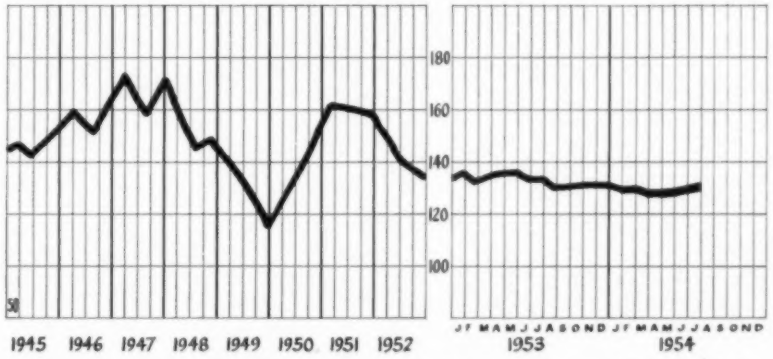
Lemon Oil Favorable

Owing to a very large crop of lemons this year in California indicates that there will be ample stocks of lemon oil as well. Although demand for the item has picked up considerably with the arrival of warmer weather, this increased interest in the oil has not reduced the essential oil stocks on the spot market to any noticeable degree. However, spokesmen were of the opinion that demand would increase, and the market would become more stable, during August when the real warm weather is here.

Botanicals Sluggish

Very little activity took place in botanicals during July, since most of the items maintained their former prices. One exception was in chamomile flowers which showed a sharp increase owing to a severe drought that seriously impaired the new crop.

[50 RAW MATERIALS—WEIGHTED PRICE INDEX. 1926 = 100.



The price index of fifty commodities for July advanced from 129.0 to 129.4.

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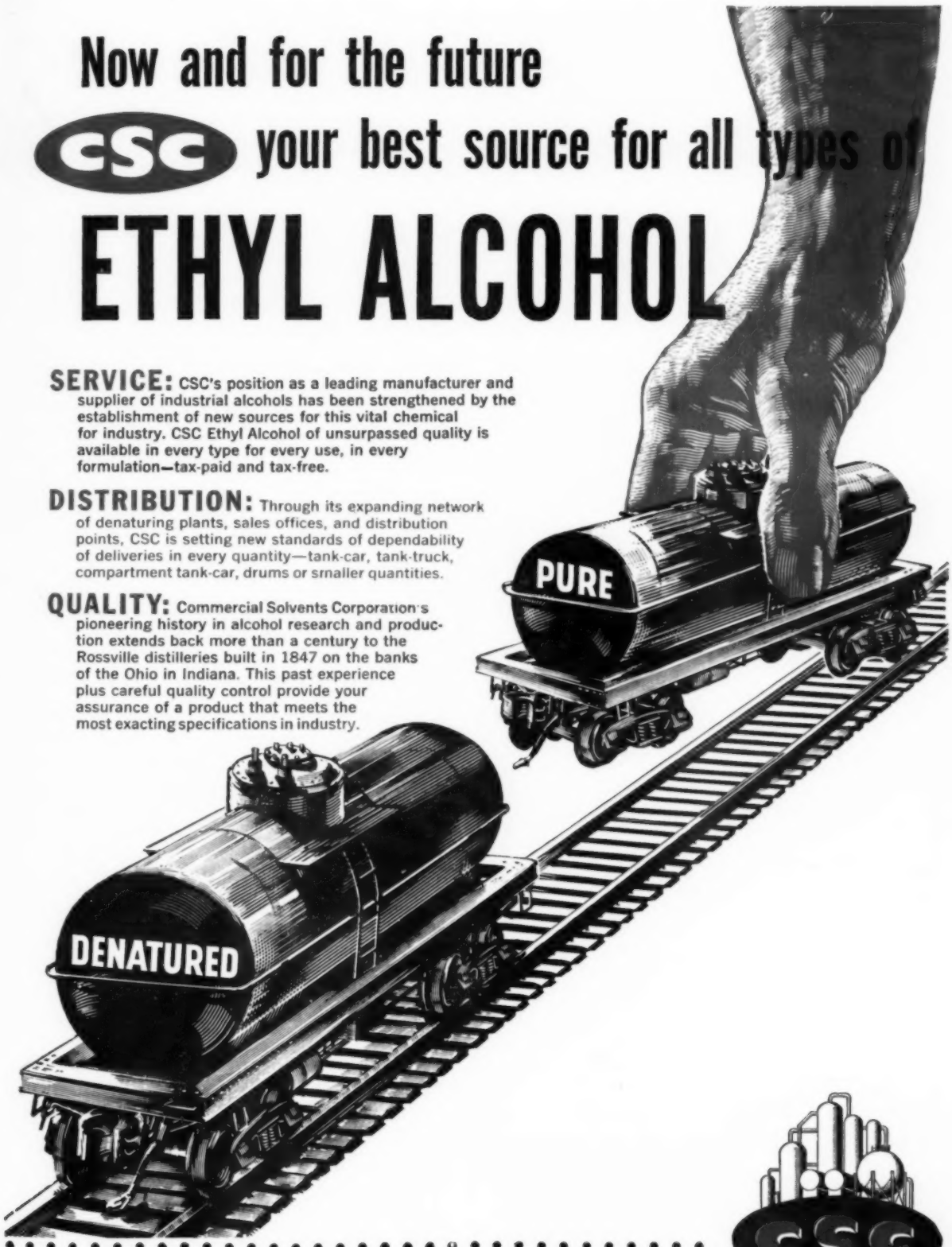

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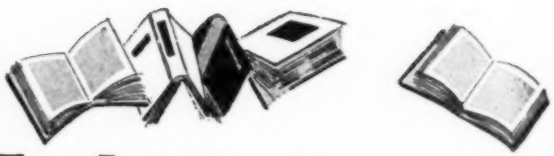

Industry's Books...

Fluorescence Analysis in Ultra-Violet Light, *by J. A. Radley, M.Sc., F.R.I.C., Chemical Consultant, and Julius Grant, M.Sc., Ph.D., Chemical Consultant, being volume seven of a series of Monographs on Applied Chemistry, under the Editorship of E. Howard Tripp, Ph.D., Fourth Ed., Revised, 560 pp., Illus., D. Van Nostrand Co., New York, (1954), cloth,* **$12.** The long delay in the publication of this new edition was occasioned by a desire to wait until the work published during the war period (particularly in what were then enemy countries) could receive the fullest consideration. In addition to the inclusion of this and other new work, the opportunity has been taken to revise the whole text. Thus, a good deal of "dead wood" has been cut out, and large portions of the remainder of the book have been completely rewritten. In particular, attention may be drawn to an entirely new section dealing exclusively with the applications of fluorescence analysis to the evaluation of vitamin activity; and also to the many new photographs of fluorescence phenomena. New lamps for the production of ultra-violet light, and new apparatus and technique used for fluorescence analysis (such as fluorescence chromatography), are also dealt with fully. As a measure of the still increasing importance of this subject it may be mentioned that the references to the original literature recorded in the book now number nearly 3,500.

The Chemistry of the Morphine Alkaloids, *by K. W. Bentley, Lecturer in Chemistry in the University of Aberdeen, 433 pp., (1954), Oxford University Press, New York, cloth,* **$8.** This work is the first of a planned series of monographs on the Chemistry of Natural Products, in which emphasis will be placed on a complete account of investigations bearing on molecular structure by chemical transformation and synthesis. Morphine, the first of the vegetable bases to be recognized, was isolated from opium during the first decade of the nineteenth century. Its synthesis, announced in 1952 by Gates, finally proves the validity of the constitution proposed by Gulland Robinson. Hence a review at this moment is particularly timely. The unique rearrangements in the molecules of morphine and thebaine derivatives lend a fascination to their study, and the story is well told by Dr. Bentley, who has made important recent contributions to the subject.

Industrial Fermentations, Vol. I, *Edited by Leland A. Underkofler, Ph.D., Professor, Chemistry Department, Iowa State College, and Richard J. Hickey, Ph.D., Research Microbiological Chemist, Commercial Solvents Corp., 565 pp., Illus., Chemical Publishing Co., New York, (1954), cloth,* **$12.** This volume has taken the form of a symposium on many of the phases of industrial fermentations. Most chapters are written by contributors who have had considerable experience with their selected topics. Most of the chapters are limited primarily to industrial processes which are or have been commercially important. However, a few topics are included which, while not at present industrially utilized, are potentially important; that is, they have been or are being considered for commercial exploitation. This volume is divided into four main parts as follows: Part I.—Alcohol Fermentation and Its Modifications. Part II.—The Production of Yeast. Part III. — The Butanol - Acetone Fermentations. Part IV.—Fermentative Production of Organic Acids.

Residual Stresses in Metals and Metal Construction, *Edited by William R. Osgood, Professor of Mechanics and Chairman of the Department Illinois Institute of Technology, 363 pp., Illus., Book Div., Reinhold Publishing Corp., New York, (1954), cloth,* **$10.** Prepared under the guidance of the Committee on Residual Stresses of the National Academy of Sciences National Research Council, this book describes and carefully evaluates the effects of residual stresses upon the performance of various kinds of structures. Particular emphasis is placed on the possible contributions of these stresses to fracture. Twenty-two papers, contributed by specialists in the field from both here and abroad, offer an amazingly wide range of information on the origin, magnitude, distribution, etc. of all types of residual stresses existing in a structure or a machine, whether arising from welding, machining, or other causes. In addition, a special summary prepared by the Committee covers many aspects of the residual stress problem, and includes several recommendations for future research and study.

The Story of Spices, *by John W. Parry, 208 pp., Chemical Publishing Co., Inc., New York, (1953), Cloth,* **$4.50.** This is an interesting account of the progress of spices until they reach their present status on grocery and pantry shelves. The author guides us through the entire history of the world in the wake of the spices which, in ancient times and the middle ages, ranked with the precious stones in the inventory of royal possessions. He tells us how spices were first monopolized by the few, how they determined the wealth and policies of entire nations, what important role they played in ancient medicine, how they served as an incentive for the discovery of new water ways and continents. An epilogue gives an outline of the development, present standing, and future trends of the spice industry and an appendix describes, in alphabetical order, the origin and nature of all the commercial spices.

KOMMON/ SCENTS!

Aftermath of the meeting between President Eisenhower and Winston Churchill makes "Co-Existence" the big word. Unfortunately, a new word for a problem isn't the same as resolving the problem itself.

• • •

There was a lot of nostalgia in the handclasp on American soil of the British and American leaders. Even the cynics had to admit that when Churchill opened his hand it held America's heart not our money.

• • •

The effect of the meeting on Russian observers was profound. They have so little experience with a handshake that isn't related to Judo or the lifting of fingerprints by the secret police.

• • •

Still up for grabs are the questions of Indo-China, Korea and the unification of Germany. To date, our side agrees that the Russians won't agree to anything. This makes Security as much a problem for psychiatrists as military leaders.

• • •

At the risk of indelicate taste, one must observe that the predicted succession to Premiership by Anthony Eden seems a long way off. As a matter of fact, the way Churchill is going, he may yet serve as leading pallbearer for both Molotov and Eden.

• • •

The matter of Formosa must've come up again in the Churchill-Eisenhower talks. Because so much has been undisclosed, it is still tough to decide whether our fleet is protecting Chiang Kai-shek from Red China, Red China from Chiang Kai-shek or the United States from both of them.

• • •

The Cosmetic Industry thrilled to Anglo-American defense efforts that brought the aged Churchill across the Atlantic. In fact, America never had such a big dock party since the last British colonial governors journeyed across the Atlantic back to England.

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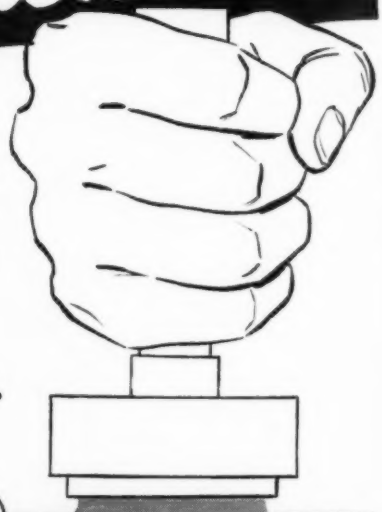
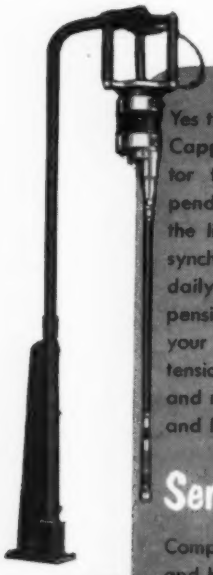


for long or short runs

for caps to 90mm.



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Readers' Questions

Waterless Hand Cleaner: We would greatly appreciate any information you can give us on formulation for a waterless hand cleaner containing lanolin. BOSTON.

The subject of waterless hand cleaners was reviewed in some detail in the March, 1953, issue of *Drug & Cosmetic Industry*. The following lanolin-containing cleaner is taken from this review:

Polyethylene glycol (Carbowax 1500)	**20 parts**
Wetting agent (Ultrawet)	**8 "**
Sodium pyrophosphate	**4 "**
Carboxymethyl cellulose	**6 "**
Lanolin	**5 "**
Glycerine	**5 "**
Dioxane	**20 "**
Water	**32 "**
Perfume	**sufficient**

The components are mixed in a high speed stirrer in the following order: CMC, water, Carbowax, wetting agent, pyrophosphate, lanolin, glycerine and dioxane.

Foot Lotion: Would you please send me a formula for a preparation to be used by chiropodists to massage the feet. It should be a creamy liquid and dry on the skin after little massage. It should not be greasy and should have a cooling effect. CHICAGO.

It seems to me that you could obtain the product you wish by using a standard hand lotion formula as the basis for such a material. The cooling action could be obtained by incorporating 0.25 per cent of menthol in the lotion. Perhaps a little camphor would also help to improve the cooling action.

Multivitamin Preparations: I wish to manufacture a multivitamin suspension or emulsion to be given in teaspoon doses for patients who cannot swallow capsules or tablets. I would appreciate any information you can give me. NORTHAMPTON.

It is my impression that the preparation of most multivitamin suspensions or emulsions combining both the oil-soluble and water-soluble forms are covered by patents. I think a check on the following patents will give you most of the basic information concerning the formulation of these vitamin emulsions:

Freedman, L. & Green, E.: U. S. Patent 2,417,299, 1947.

Freedman, L. & Green, E.: U. S. Patent 2,518,230, 1950.
Buxton, L. O. & Lipsius, S. T.: U. S. Patent 2,421,598, 1947.
Bernhart, F. W.: U. S. Patent 2,463,738, 1949.
Zentner, M. R.: U. S. Patent 2,628,930, 1953.

Skin Whitening Cream: Are there any available formulations for a skin whitener cream? We have been experimenting with the mercurials, but we are not particularly pleased with the results. If you can be of any assistance to us in this matter, we shall be grateful for your cooperation. St. Louis.

As you are probably aware, mercurials are toxic and their use in bleaching creams is not very extensive nowadays. In addition to mercurials, bleaching creams may contain substances like hydrogen peroxide, sodium perborate, lactic acid and citric acid. A bleaching cream, as suggested by Goodman, may be made along the following lines:

Zinc peroxide	**8 parts**
Titanium dioxide	**2 "**
Talc	**24 "**

Mix powders and incorporate in a cream formed by emulsification of:

Stearic acid	**10 parts**
Potassium hydroxide	**1 part**
Glycerine	**6 parts**
Water, to make	**100 "**

Hair Treatment Cream: We would like a formula to produce a hair treatment cream, as the formula we are using now is not quite satisfactory. If you will be able to assist us with a more up-to-date formula, we will be thankful. We do not want anything that is very greasy. SAN PAULO.

I think that the following combination which is not excessively greasy, should serve your purpose:

Petrolatum	**15 per cent**
Mineral oil	**10 " "**
Lanolin	**20 " "**
Beeswax	**12 " "**
Sorbitan monostearate (Span 60)	**5 " "**
Polyoxyethylene sorbitan monostearate (Tween 60)	**5 " "**
Borax	**1 " "**
Water	**32 " "**
Preservative	**sufficient**
Perfume	**sufficient**

Mix and heat the first six ingredients to 70° C. Mix the borax, water and preservative and heat to 72° C. and add to the first solution, slowly, with agitation. Perfume at 45° C. and agitate until cold.

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(*Continued from page 228*)

ventors O. Isler and K. Doebel, the patent having been assigned to Hoffmann-La Roche Inc.

Food Antioxidant

It is asserted that a preferred anti-oxidant composition which meets the severe requirements for use in foods and has been officially approved for such use comprises solid particles each of which contains about 50 per cent to about 90 per cent by weight of butylated hydroxyanisole and from about 10 per cent to about 50 per cent by weight of propyl gallate.

A patent on this composition was granted to A. E Hoffman, J. A. Chenicek and H. E. Whitmore and the patent (U. S. 2,683,694) was assigned to Universal Oil Products Company.

Aromatic Esters of Basically Substituted Isocycyl and Aralkylcarbamates

J. W. Cusic, a prolific inventor, recently obtained two other U. S. patents U. S. 2,683,735 and U. S. 2,683,737, both assigned to G. D. Searle & Company. The former deals with aromatic esters of basically substituted isocycyl carbonates of which phenyl ester of N-(β-diethylaminoethyl)benzylcarbamic acid is an example. These esters are said to have medicinal action on cardiovascular, neuromuscular and renal functions and the quaternary salts are said to be of value as active parasiticides.

U. S. patent 2,683,737 deals with the aromatic hydrocarbon esters of basically substituted aralkyl carbamates of which the phenyl ester of N-(β-diethylaminoethyl)benzylcarbamic acid is an example. These carbamates are said to have medicinal action on neuromuscular and other organic functions, especially that of the kidney and particularly as diuretics. Certain of the salts are also said to be of value as active ingredients of parasiticidal compositions.

Ion Exchange Purification of Vitamin B_{12}

A process for purifying B_{12} is covered by U. S. patent 2,684,322, the process being expressed in claim 1 as follows:

A process for the partial separation of associated impurities from vitamin B_{12}-active material by adsorption of impurities on an ion exchange resin which comprises intimately contacting an aqueous solution containing vitamin B_{12} and normally associated impurities with a cation-exchange resin consisting of a resinous condensation product having sulfonic acid cation-binding groups, separating the solution from the resin and recovering the decolorized and purified vitamin B_{12}-containing solid material from the solution.

Cation-exchange resins employed are those sold under such tradenames as Dowex (Dow Chemical Co.), Duolite (Chemical Process Co.), Ionac-C (American Cyanamid Co.) and Seo-Rex (Permutit Co.). Particularly useful cation-exchange resins are ionac C-240 and Ionac C-200.

Anion-exchange resins contemplated for use in the process include those sold under such tradenames as Amberlite (Resinous Products Division of Rohm and Haas Co.), Ionac-A (American Cyanamid Co.) and the like. A particularly useful anion-exchange resin is Ionac-A-300, which is a melamine condensation product containing free tertiary amino and quaternary ammonium groups. Other suitable anion-exchange resins are Amberlite IRA-400.

The inventor was George C. Colovos, the patent having been assigned to The Upjohn Company.

Procaine Ascorbate Preparation

Dr. Simon L. Ruskin, who was recently in the news in connection with his suit with Eli Lilly & Co. on procain penicillin, recently obtained a patent (U. S. 2,684,323) on procaine ascorbate. The idea of combining procaine with vitamin C is to avoid the irritating and disturbing effect encountered with procaine salts generally.

Patent Fees

As noted before in these columns, government patent fees are going to be increased. In line with this thought Congressman Reed of Illinois introduced H. R. 9794 on July 2, 1954 with a schedule of increased fees for Patent Office services. While the probability is that the fees are going to be increased, the chances are that the schedule set forth in Mr. Reed's bill may well be altered before final passage and for this reason nothing much would seemingly be gained be setting forth the schedule here. Suffice it to say that while the government fees will be raised appreciably under this bill they will still remain a relatively small factor in the cost of obtaining and maintaining patent and trade mark rights.

RECENT PATENTS

2,677,645—**Schering—Dextran Roentgenographic Preparation.**

2,677,680—**Hoffmann-La Roche—Manufacture of Riboflavin Phosphate.**

2,677,682—**Am. Cyanamid—Sulfonamido Pteridines.**

2,677,683-4—**Am. Cyanamid — 5 - Heterocyclic Amino Derivatives of Benzophenoxazine.**

2,677,686—**Am. Cyanamid—Pyrazines.**

2,677,687—**Sterling Drug — N - (4 - Methoxybenzyl) Isoquinolinium Chloride.**

SELECTING POLYETHYLENE GLYCOL ESTERS

(*Continued on page 181*)

In addition, there were many esters that differed only slightly in critical temperature. The degree of accuracy with which the readings were determined was not fine enough to differentiate among many esters on this basis.

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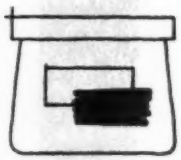

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Classification by Surface Tension Reduction

A new procedure, based on the fact that there is a direct relationship between the surface tension of a solution of a surfactant and the hydrophilicness of that agent, was instituted. It appears that the more hydrophilic a particular agent is, the less it reduces the surface tension of water. Taking this fact into account, this new technique was employed wherein the surface tensions of the aqueous solutions or dispersions of each of the esters were determined. Solutions of 0.5 per cent of individual esters in water were prepared and the relative measurements of surface tension were made using the Cenco-du Nouy Tensiometer.

Since the precision of the surface tension method is much greater than that of the critical temperature method, it was felt that these readings could be used to place the polyethylene glycol esters in a hydrophilic series ranging from the least hydrophilic to the most hydrophilic. This arrangement is presented in Table II. This table indicates that as the hydrophilic portion of the molecule is increased, the surface tension of water

TABLE II. A Hydrophilic Series of PEG Esters Ranging from the Least to Most Hydrophilic

Hydrophilic Number	Ester	Relative Surface Tension Dynes/cm. at 25° C.
1.	PEG 200 monolaurate G*	33.03
2.	PEG 200 dilaurate K**	33.09
3.	PEG 200 monolaurate K	33.11
4.	PEG 300 dilaurate K	33.77
5.	PEG 200 monooleate K	34.35
6.	PEG 400 dilaurate K	34.61
7.	PEG 200 dioleate K	34.73
8.	PEG 300 dioleate K	34.87
9.	PEG 400 dioleate K	34.95
10.	PEG 200 monostearate G	34.98
11.	PEG 400 dioleate G	34.99
12.	PEG 200 monostearate K	35.08
13.	PEG 200 monooleate G	35.11
14.	PEG 200 distearate K	35.30
15.	PEG 300 monooleate G	35.40
16.	PEG 200 dilaurate G	35.41
17.	PEG 600 dioleate G	35.63
18.	PEG 400 distearate K	35.82
19.	PEG 400 distearate G	35.89
20.	PEG 600 distearate G	36.22
21.	PEG 600 dilaurate K	36.28
22.	PEG 300 monostearate K	36.34
23.	PEG 300 monostearate G	36.38
24.	PEG 600 distearate K	36.45
25.	PEG 300 monolaurate K	36.95
26.	PEG 400 monolaurate G	37.21
27.	PEG 300 monooleate K	37.24
28.	PEG 400 monolaurate K	37.35
29.	PEG 1000 dilaurate K	37.51
30.	PEG 400 dilaurate G	37.61
31.	PEG 600 monolaurate G	38.22
32.	PEG 600 monolaurate K	38.30
33.	PEG 400 monostearate K	38.36
34.	PEG 400 monooleate G	38.38
35.	PEG 400 monooleate K	38.90
36.	PEG 400 monostearate G	39.12
37.	PEG 400 di, triricinoleate G	39.29
38.	PEG 600 monostearate K	40.02
39.	PEG 600 monostearate G	40.27
40.	PEG 600 dioleate K	40.51
41.	PEG 1000 monolaurate K	40.54
42.	PEG 400 monoricinoleate G	40.62
43.	PEG 1000 distearate K	41.20
44.	PEG 600 monooleate G	41.62
45.	PEG 1000 monooleate G	41.70
46.	PEG 600 monooleate K	41.99
47.	PEG 1000 monostearate G	42.55
48.	PEG 1000 monostearate K	42.85

* = Glyco Products.
** = Kessler Chemical Corp.

is lowered to a lesser degree or the surface tension readings are numerically greater. Furthermore, it may be observed that the arrangement of individual esters within each group is in every case identical to the arrangement in Table I where critical temperature was used as the criterion for classification.

Application of the Hydrophilic Series

The Hydrophilic Series as presented in Table II, should serve as a guide to the selection of the appropriate polyethylene glycol ester for a particular application. In order to test the validity of this arrangement as well as to discover optimum concentrations of these agents, a series of emulsification experiments was performed. Fifty per cent mineral oil emulsions were prepared using one, five and 10 per cent concentrations of each of the members of the series. No special technique was employed in the preparation of the emulsions. The ester was added to the oil, the proper volume of

TABLE III. Results of Emulsification Tests with PEG Esters Preparing 50 Per Cent Mineral Oil-Water Emulsions

Ester	Hydrophilic Number W/O	O/W	Optimum Conc. (Per Cent)‡
PEG 200 monolaurate G*	1		5
PEG 200 dilaurate K**	2		
PEG 200 monolaurate K	3		5
PEG 300 dilaurate K	4		
PEG 200 monooleate K	5		5
PEG 400 dilaurate K	6		
PEG 200 dioleate K	7		
PEG 300 dioleate K	8		
PEG 400 dioleate K	9		
PEG 200 monostearate G	10		1
PEG 400 dioleate G	11		1 to 5
PEG 200 monostearate K	12		1
PEG 200 monooleate G	13		1 to 5
PEG 200 distearate K	14		
PEG 300 monooleate G	15		5 to 10
PEG 200 dilaurate G	16		
PEG 600 dioleate G	17		
PEG 400 distearate K	18		1
PEG 400 distearate G	19		1
PEG 600 distearate G		20	1 to 5
PEG 600 dilaurate K	21		
PEG 300 monostearate K		22	5 to 10
PEG 300 monostearate G		23	1 to 10
PEG 600 distearate K		24	1 to 10
PEG 300 monolaurate K		25	
PEG 400 monolaurate G		26	
PEG 300 monooleate K	27		5
PEG 400 monolaurate K		28	
PEG 1000 dilaurate K	29		
PEG 400 dilaurate G	30		
PEG 600 monolaurate G		31	
PEG 600 monolaurate K		32	5
PEG 400 monostearate K		33	5 to 10
PEG 400 monooleate G		34	
PEG 400 monooleate K		35	
PEG 400 monostearate G		36	5 to 10
PEG 400 di, triricinoleate G	37		
PEG 600 monostearate K		38	10
PEG 600 monostearate G		39	10
PEG 600 dioleate K	40		5 to 10
PEG 1000 monolaurate K		41	
PEG 400 monoricinoleate G	42		10
PEG 1000 distearate K		43	10
PEG 600 monooleate G		44	
PEG 1000 monooleate G		45	
PEG 600 monooleate K		46	
PEG 1000 monostearate G		47	
PEG 1000 monostearate K		48	

‡ = Concentrations are given for those forming most stable emulsions.
* = Glyco Products.
** = Kessler Chemical Corp.

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Dentifrices, lotions, pharmaceutical emulsions and a variety of similar products are made better and more sales appealing because SeaKem Stabilizers are used in their formulations to accomplish viscosity control, bodying, foam stabilization, suspension or emulsification.

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water was introduced, and the entire mixture was shaken in a bottle.

Observations were made after the emulsions had been allowed to remain undisturbed for twenty-four hours. The results indicated that the Hydrophilic Series as presented in Table II was valid within the scope of the experiment. Those esters which lie toward either end of the series form the most unstable emulsions as evidenced by complete phase separation in each case where one per cent of the ester had been used even after passage through a hand homogenizer. This was to be expected since the extremities of the series represent those esters which are most lipophilic and most hydrophilic respectively. Thus, the proper balance required for the production of stable mineral oil emulsions is lacking at low concentrations. It was necessary to increase the concentration to five or 10 per cent before those esters located at the extremes of the series could function effectively as emulsifying agents.

As was expected, the most lipophilic esters formed water-in-oil emulsions and the more hydrophilic members formed oil-in-water emulsions. There is, however, some overlapping among the esters located in the central portion of the series.

Table III lists the esters, the location of the Hydrophilic Number of each ester indicating the type of emulsion which it forms. The last column indicates the optimum concentrations of those particular esters which were found to form the most stable emulsions of 50 per cent mineral oil, either oil-in-water or water-in-oil.

Conclusions

The result of this investigation has been the development of a Hydrophilic Series, which could be the initial effort toward the systematization of the application usefulness of the polyethylene glycol esters. A partial validation of this series has been accomplished based upon emulsifying efficiency using a 50 per cent mineral oil-water emulsion. Implications exist for the use of the Hydrophilic Number as a guide to the selection of the proper agent for each particular application in drug and cosmetic formulation.

Further amplification of the series which has been developed could include all other non-ionic agents. The extent to which any agent will reduce the surface tension of water will permit the assignment of an appropriate Hydrophilic Number and the placement of the agent in the proper position within the Hydrophilic Series. A continuous reorganization of the series incorporating new agents can conceivably be made. In this manner, as new agents are developed, a more reliable index of their efficiency for particular applications can be established without the necessity of resorting to "hit-or-miss" experimentation.

REFERENCES

1. "Surface Active Agents and the Eye," Draize and Kelley, Drug and Cosmetic Industry, 71, 1, p. 36, July 1952.
2. "Polyglycol Esters," Kessler Chemical Corporation, Philadelphia.

SHIPPING CASES PUT TO WORK

(Continued from page 187)

Since the most important information to the shipping clerk, once the case is stored on the floor, is the name of the product, and the size and number of items, these facts should be given a prominent position in boldface type. The possible arrangements are many, but most suggestions favor the quantity on the top left, the contents on the top right, and the product name below, center, so the case will read:

4 Doz. 4 Ounce

Acme Cough Syrup

Some warehouse men say this information need be only on one *end* of the case—never just on the long side—others state it would be of great advantage to have it on all four sides, to make the printing visible at all times, regardless of the case arrangement.

Cases having the printing on the long side, which may be twice the length of the shorter end, have to be stored on the shelves so this long side will be exposed to view. This means half as many cases can be stored in a given area—and space is usually at a premium in storage areas.

There are several methods which are being used to arrive at legible case markings and can best be described by mentioning a few actual examples.

Johnson & Johnson, New Brunswick, N. J., packages its products in as near cube-shape cases as possible to facilitate handling and stacking. Some products, naturally, do not lend themselves to the cube because of their elongate shape.

This company puts all the shipping information on what it calls the shipping end of the case, and does it in a unique manner. At the top left and right are the quantity and size of the product, with the name below in the middle in bold, easy-to-read type. Under this information is the "Stencil Frame," a stamped form printed by the box manufacturer, the center of which is left blank for the name and address of the customer. Within the left side of the stencil frame, above the shipping address, is the location number (always the same for any one product) which indicates the exact position in the company's New Brunswick warehouse where that particular product is stored. On the right side is the product code number. These numbers, important to the Johnson & Johnson shipping clerks, lose their significance when the cases are being handled by an independent wholesale house, or other J & J warehouses. The name, size and quantity of the product, however, appear in such prominence that the case can be identified by any one. The J & J name appears in the familiar script at the bottom, along with the address.

The same information is repeated on the opposite end of the case, with the exception of the shipping address which appears only on the one end. If it proves helpful, the company may print this product information on all four sides in the future.

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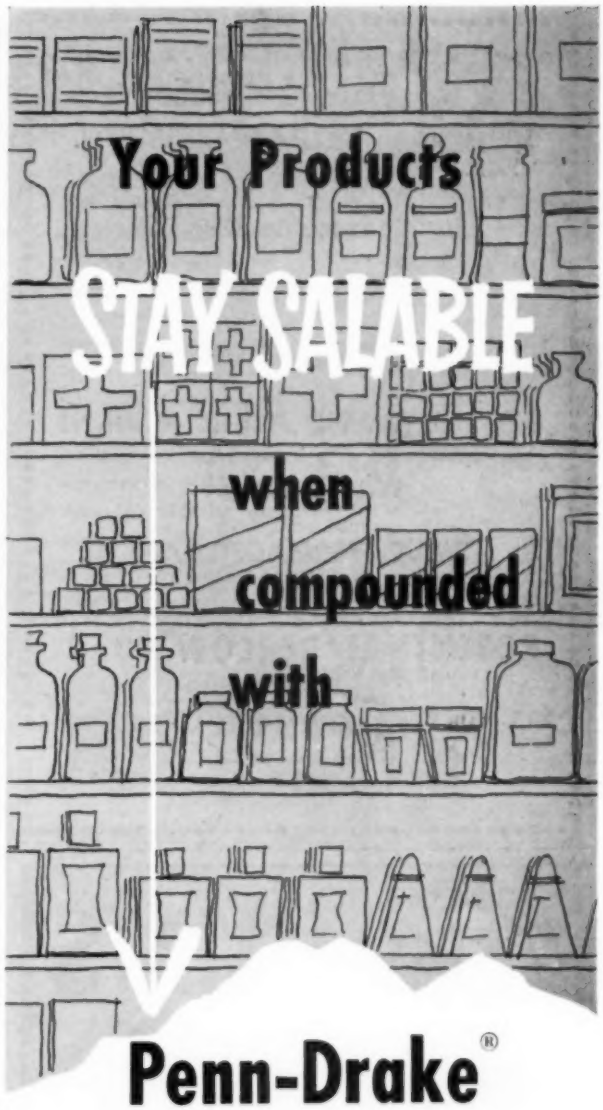

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black—for the identification of some of its products, as the "ZO" line of Adhesive Tape printed in blue, and the Water Proof Adhesive Tape, in red.

The company has special "Multi-Use" cases for products made in various size. These cases have only the particular product name written on them, and after they are packed with that product, a corresponding Identification Label, telling the size and quantity, is pasted on the shipping ends. There is a different label for each size of product, but all the cases for each class of merchandise, regardless of size, are printed identically, allowing greater facility in their use.

A typical Identification Label has the following information:

5 Boxes Cut 1"
NU-WRAP
BANDAGE ROLLS
2 X 28 GAUZE
10 YARDS

Merck & Co. Inc., Rahway, N. J., at the present time has three types of labels on its shipping cases—the ordinary stencil, a dress label with a three-color illustration of the product, and a plain label with block printing. The company is gradually dropping the stencil label and switching to the other two more legible types.

Their Zinc Stearate Baby Powder is labeled with black letters on a pink field in the middle of both ends of the case and reads:

MERCK
ZINC STEARATE
BABY POWDER

At the top of the case is this inscription in smaller figures:

72 X 1 OZ. Cans 70681
(6 BOXES of 12 X 1 OZ.)

For repack cases, Merck stamps the words, "Miscellaneous Items," on the outside in one-half-inch letters, red ink. Fortunately, many other manufacturers are now doing this too. Where there are a number of cases included in one order, a packing slip is inserted in the last case listing the contents of the entire order. A notation appears on the outside of that case to indicate the packaging slip is enclosed—a great help to the shipping clerk because he must find the slip before he can check the contents.

The company packages several products in fiber drums, with extremely bold labels. The name, Riboflavin Mixture, for example, stands out above all other information. At the top, left, in much smaller figures is the notation, 25 lbs., and at the right, in equally small, but legible, figures, the number, Sp. 807. Under the main title is written, "Intended for use in Livestock and Poultry Feeds." This latter information is not necessary, as far as the shipping clerk is concerned, and is therefore inconspicuous.

Merck's pictured label, as represented by "Fleischmann's Enrichment Wafers for Bakers," is at once recognizable because the actual inner carton of wafers is illustrated on the outside of the case and includes a picture of the wafer itself. The notation, 20 X 50 Wafers, is printed above the illustration, and Merck's name, below. The shipping instructions are pasted on the top of the case, and the information, "From Merck & Co., Inc.," plus address, usually on the sides.

Some firms, like Merck, print trade marks or slogans on a few of the cases, as with the Zinc Stearate Baby Powder, which carries a drawing of nine ducks and the inscription, "Sheds water like a Duck!"

Merck very wisely relegates this slogan to the bottom where it neither obstructs the label nor clutters up the end of the case. While the shipping cases have very little advertising value, as far as the public is concerned, and should carry information important only to the shipping handlers, such slogans do help dress them up and improve their appearance.

Color is appearing more often in case labels and is a great help in distinguishing various items in the same product line. The Mennen Co., Morristown, N. J., labels its cases of baby talc and powder with blue ink, and its men's talc and powder in green ink, to match the coloring of the actual product containers.

Another company prints its case markings in green, pink, blue and other colors to match the shade of toilet tissue enclosed. This is a great aid to the shipping clerk, for he merely has to look at the color of the label to determine the color of the tissue.

Still another variation is accomplished by the company which provides contrasting inks for labeling its vanishing cream, cold cream and dry-skin cream.

Many other companies have also become aware of the need for redesigning their shipping case markings and are cooperating with the National Wholesale Druggists' Association toward that end.

In this way, they, too, are making their cases work for them so that the corrugated containers not only hold the merchandise, but they also carry pertinent and necessary product information and shipping instruction on the outside. Through these changes in case markings, the manufacturers are cutting down on the costs incurred by repeat orders (caused by the first order being filled incorrectly), the necessity for opening original cases and counting every item, errors in sending out deals, misplaced stock in the warehouse, and the many other unnecessary factors which frequently delay the completion of orders.

AEROSOL SUN TAN PREPARATIONS

(*Continued from page 175*)

hydrocarbons. Their incorporation would greatly increase the duration of the sunscreen film without causing the film to appear greasy. They need not necessarily be mutually compatible with the sunscreen since a mutual incompatibility need not lessen the functional effects of the two agencies. According to their manufac-

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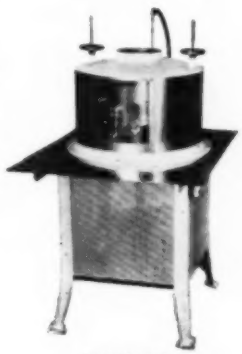
This machine was especially built for concerns whose production requirements necessitate flexible equipment for washing a wide range of vials and bottles, both large and small. It has a production of up to 1200 containers per hour and requires no accessory parts for handling the different containers.



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turers they are capable of wetting the surface even in extremely thin coating. Such coatings would be less likely to be greasy.

The silicones however are not an unmixed blessing. They are expensive substances and their incorporation into aerosol preparations must therefore be limited. If the desired optimum effect would be too expensive, it is recommended that the concentrations be lowered and other substances such as isopropyl myristate is used in conjunction with them. Certainly the presence of even a small amount of silicones would enhance the protective effect desired.

The solubility of the silicones is greatly reduced by the presence of water. In aerosol preparations of the type discussed water is perhaps the greatest single cause of corrosion to the metal container. The chlorine grouping on these chloro fluro hydrocarbon repellants are effected by an hydrolysis due to the presence of water causing hydrochloric acid formulation, leading to the metal corrosion. The use of absolute alcohol has therefore become mandatory—a situation which would not interfere with silicone inclusion in the formula, but rather help it.

The amount of the sunscreen used in protective preparations is approximately around five per cent level, though this figure is arbitrary. Actually the concentration would be dependent on the effectiveness of the screening agent chosen. The concentration of the silicone should be as high as possible, but since a technicality would enter at this point because of its high cost we could take five per cent as being a good figure. The amount of alcohol and propellant needed to make up the rest of the preparation would be dependent on the solubility behavior of the sunscreen in the mixture chosen. It is recommended, however, that a three to one ratio of propellant to alcohol be used as a safe balance against torch effect. It would indeed be better if the alcohol concentration could be lowered without adversely effecting the compatibility of the sun screens.

I have perhaps overemphasized the importance of complete solution of the various solutes in the alcohol propellant solvent. However if a separation occurred one of the globules could easily choke the valve so that the package become unusable. The compatibility with the solvent therefore becomes most important.

If the preparation should be desired to absorb a greater band of ultra violet light than the erythremal region, it may be wise to use a combination of two or more sunscreens so that the desired absorption of the entire range may be effected. In actual practice, however, most people are desirous of procuring a suntan but would like to avoid the painful effects in obtaining it. Formulation of natural melanin in the tanning process acts as a good sun screening agency itself since the absorption curve of the melanin seems to coincide with the erythereal ultraviolet range. The darkening melanin of tan seems to take place at 3500 to 3700 Angstrom Units.

There have been proposed a large number of methods for testing the efficiency of sunscreen agents and

preparations. Many of them utilize the ultraviolet spectophotometer as means of determining the percentage of ultraviolet transmittance at any particular wave length. These methods are all of importance in a preliminary checking of the qualifications of the product. Other considerations must be borne in mind however. The duration of the life of the film is of paramount importance. Its resistance to water should also be determined. Among the most effective ultraviolet screens are the various umbelliferones. These compounds have high opacity against ultraviolet light and for this reason should be excellent sunscreening agents. However, they work best from an alkaline aqueous solution and this therefore places them in a secondary category as primary agencies in an aerosol package. There are others which have excellent screening properties which are difficult of solution on the required medium. Formulation must therefore be a series of compromises.

WHAT MAKES AN IN-STORE DISPLAY CLICK?

(*Continued from page 169*)

in the image of their particular bottle; cosmetic manufacturers can reproduce giant-size replicas of lipsticks and powder containers; pharmaceutical producers have the opportunity to present three-dimensional reproductions of their products. Take advantage of the flexibility and drama an in-store display provides to create a strong product identification.

4. *"Act Now" Copy.* The successful display suggests buying. In different degrees of subtleness, it tells the shopper to "take one;" "Serve yourself;" take advantage of this introductory offer." It encourages him to complete the marketing cycle by buying the product, and it does this while he is in the store able to actually hold the product—and while he has the money with him. One of point-of-sale's most important benefits is that it brings the shopper, the product and the shopper's pocketbook together. Successful point-of-sale merchandising unit users make the most of this perfect selling climate by putting "act-now" copy in this displays.

5. *Simple, Direct Art Work.* The display unit should be a backdrop for the product, not a distraction. Make the display too overwhelming in design or construction and you defeat its purpose. One hair shampoo manufacturer recently designed a self-service merchandising floor stand that was covered with an overall-pattern of stars. Shoppers were stopped by the display—but so intrigued with it they seldom bothered to look at the merchandise inside. Solution to this problem of overdesign was a new floorstand which consisted of a simple white corrugated paper background featuring a large reproduction of the manufacturer's logotype. The new stand provided a setting for the product instead of a camouflage.

Construction, like art work, should be as simple as possible. The less the dealer has to do—the easier it is for him to use the display—the more chance there is

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Ask for "The Story of Water Soluble Gums"
JACQUES WOLF & CO. Chemicals PASSAIC, N.J.
Plants in: Clifton, N.J., Carlstadt, N.J., Los Angeles, Calif.

he *will* use it. Generally, too, simple construction means lower production costs.

6. *Enthusiastic Distributor and Dealer Participation.* The finest display in the world won't do much selling if it's stacked away in a back room, collecting dust. If it isn't out in the aisles, its worthless.

Basic as this sounds, the fact is many manufacturers who conscientiously plan every other step in their display program fall down on one of the most important: training and encouraging their distributors and retailers to use the display.

Competition for space in retail outlets is tooth-and-nail. How much attention a particular display receives from the retailer depends greatly on how enthusiastically it has been sold to him by the distributor—and by the manufacturer. For this reason, intelligent display users formulate thorough-going orientation programs aimed at their distributors which impress on the distributors the importance of placing current displays and making sure they are used.

These programs include complete display kits; booklets on the value (to the retailer) of in-store displays; slide-films which give step-by-step instruction on how to get the most value from point-of-purchase material. They provide the distributor with convincing arguments for the use of the displays. They support him in his effort to have the displays used, rather than leave him on his own.

All these considerations are important in assuring display effectiveness. Additional factors which should be carefully studied include pre-testing of a proposed merchandising unit in selected areas before going ahead with full-scale use; illustration of the proposed unit in all other media including space and television advertising, to increase its familiarity with shoppers and retailers; and, obviously, the careful selection of a display unit source.

There are many reliable suppliers of merchandising displays throughout the country. The leaders among them offer complete creative service as well as production facilities, and will work with you to make sure the display is integrated with other advertising media and designed to create the impression most appropriate and helpful in the sale of a specific product or product line.

One easy way to find which supplier is best equipped to help solve a specific display problem is to contact the Point-of-Purchase Advertising Institute in New York. POPAI's executive director is well-qualified to give impartial and authoritative guidance in the selection of the right supplier.

Effective in-store displays, because of their unique abilities to dramatize a product; set it apart from its competition; and to create the perfect selling combination of product-customer-money brought together, offer growing possibilities to both the drug and cosmetic manufacturer. Intelligent planning and use of these displays will enable the manufacturer to take advantage of those possibilities—and be rewarded in the end with increased sales for his products.

"GOOD" AND "BAD" COSMETIC MARKETS

(*Continued from page 171*)

cosmetic expenditures—purchases are far more substantial for cities having the greater number of married women than in any others.

I shall leave open to reader speculation the questions:

Are married women more liberal with their husbands' incomes, in terms of cosmetic budgets, than single girls, or have women in the cities showing greater married populations benefited from such skillful use of cosmetics to the extent that it served their purposes in attaining matrimonial goals?

Number of Women Per Family

It is of interest and practical importance that as the number of women of cosmetic-age (14 years and over) increases in a family, there is an increase in the family's expenditures for cosmetics *but not in direct proportion.* Specifically, an increase in the number of cosmetic-age women results in an increase in cosmetic expenditures for the family, but a decrease in the *per capita* cosmetic expenditure for *each member* of the family. This might be explained by a sharing of some cosmetics among members of the same family as well as possibly the more frequent presence of a woman in her sixties-plus in larger families.

"Good" Versus "Bad" Cosmetic Markets

I have discussed a few of the major marketing factors which affect cosmetic sales in a city. There are other factors, such as climate, non-white population, etc. Knowing the importance of *each* factor for each market in the United States, we are now able, with high-power tools offered by modern statistical methods, to estimate accurately the amount of money spent on cosmetics in *each* market. This provides us with the most reliable basis ever developed for planning sales and advertising programs.

For example, let us look at the city of Boston. Its average per capita expenditure for cosmetics (by females 14 years and over) is very low . . . $6.14 in 1953, compared to a U. S. average of $8.34. Why are Boston cosmetic sales low? Let us analyze each marketing factor in this city as it affects cosmetics:

On the plus side, the level of income and the number of female white collar workers is above the U. S. average. However, the negative effects of the low per cent of married women, the large number of women per family, and other marketing factors outweigh the plus factors, and result in Boston having a very low per capita cosmetic sales.

Now let us look at a high cosmetic sales city such as Washington, D. C. Almost all factors in this city are on the positive side, i. e., above average income, higher per cent of female white collar workers, low number of women per family, etc. The only important negative factor is the low per cent of married women.

When all the factors are combined, Washington, D. C., stands out with a per capita cosmetic expenditure approximately 75 per cent above the U. S. average.

Let us take another example: a mid-western city, Denver. This city also enjoys an above-average income, and a relatively high per cent of female white collar workers and married women. There also are several other positive factors. The only negative factor is the relatively high number of women per family. Again, combining all the effects, we arrive at a high of $13.73 per capita cosmetic expenditure for Denver, compared to a U. S. average of $8.34.

In a similar manner, we have obtained the cosmetic sales data for over 200 of the most important cosmetic markets in the United States. A comparison of the six top markets is shown below:

Metropolitan Market	*1953 Per Capita Cosmetic Sales*	*Total Cosmetic Sales—1953 Dollars*	*Per Cent of U. S.*
New York	$ 7.61	$ 45,767,700	8.56 per cent
Los Angeles	10.55	22,851,900	4.28
Chicago	8.23	20,057,900	3.75
Detroit	8.27	10,947,900	2.05
Philadelphia	6.37	10,468,200	1.96
Washington, D. C.	14.75	10,178,500	1.90
Total U. S.	$ 8.34	$534,382,200	100.00

This table points up sharply that New York, frequently considered the beauty capital of the United States, actually spends less per capita than the U. S. average for cosmetics.

It is also seen from this table that Los Angeles is second only to New York as a cosmetic market. Los Angeles women simply spend approximately 40 per cent more per capita than Chicago women, reducing Chicago to third place as a cosmetic market.

Applications

The analysis presented in this article is so flexible in its application that it can be used to estimate the cosmetic sales in a city, a metropolitan area, a TV or radio area, a sales territory, or *any* special geographic area desired.

Data which tell you where your markets are and the size of each market are of course basic to sales and advertising planning. For example, facts on the size of individual cosmetic markets is now being used for:

1. CONSTRUCTION OF THE MOST ACCURATE SALES QUOTAS POSSIBLE.

   Sales territories have been reorganized, *consolidating* territories where potential did not exist to justify their number of salesmen and *splitting* territories where the number of salesmen involved was insufficient to draw their expected share of total cosmetic sales.

2. ESTIMATING THE SHARE A MANUFACTURER HAS IN EACH MARKET.

   Data on total cosmetic sales for each market have enabled manufacturers to learn their share of sales in each market and to more accurately appraise salesmen, sales methods, and advertising themes. This has permitted a greater reliance on facts in

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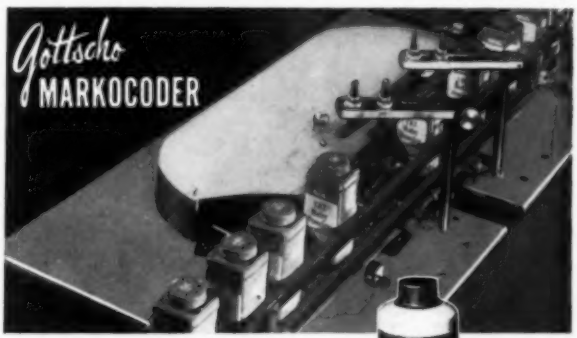

This fully automatic machine imprints code-dates on *cans, jars, bottles,* as they are filled, capped, cartoned, etc. Imprints bottom, top, ends—even recessed surfaces—with sharp, permanent, accurately located mark. Synchronizes with speed of other mechanized operations . . . accommodates packages of different size . . . features 1-minute changeover for new code-date.

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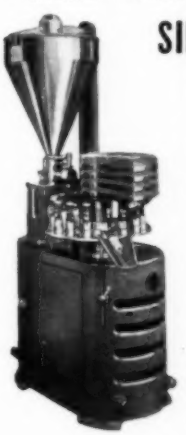

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rewarding salesmen, supervising their activities, and testing advertising themes.

3. PLANNING OF ADVERTISING EXPENDITURES AND MEDIA SELECTION.
   With knowledge of the potential of each market and an analysis of why the differences among markets, advertising agencies are guided on how to best distribute their money to m st efficiently cover their potentials. Decisions such as choice of magazine, choice of daytime versus nightime radio, can be guided accordingly.
4. ALLOCATION OF SALES PROMOTION AND COPERATIVE ADVERTISING ALLOWANCES.
   Manufacturers compare the cosmetic potential in a market with their actual sales and then check their advertising expenditures already credited to that market to determine if additional promotion money should be alloted to that market. The potentials are similarly used as a guide for encouraging cooperative advertising allowances in areas where they will do the most good.
5. SELECTION OF TYPICAL CITIES.
   Total cosmetic sales data market by market forms a basis from which typical cosmetic cities can be obtained. Testing of new products in typical cosmetic cities provides us with better information from which to estimate total U. S. sales.

Conclusion

In this article, I have analyzed the "why" of good, bad, and average cosmetic markets, and briefly mentioned how this information can be used in preparing sales and advertising plans. As the cosmetic industry grows increasingly competitive, there is, of course, a tighter squeeze on sales and profits. Of necessity, then, we must look to more efficient distribution through the improved sales and advertising planning which scientific market-by-market analyses make possible.

A.D.M.A. MEETING

(*Continued from page 178*)

proportional to pharmaceutical progress in the development of new and better drugs for the treatment of disease. It is with these convictions that I reiterate my belief that our new-drug responsibilities constitute the very heart of our mutual problems.

"To this end we are increasing our medical staff in the new drug branch. Two physicians, Dr. Ralph G. Smith and Dr. Ernest Q. King, have carried the entire load alone for too long. This, despite an ever-increasing number of applications and rapidly increasing complexity of information. Incidentally, I should say with some emphasis that the review of a new-drug application entails far more than just sitting behind a desk and casually reading it. A full discussion of this must await a future occasion, but I do not want you to think that the work is purely perfunctory or inconsequential. In addition to our doctors we have a group of able chemists in the new drug branch who render invaluable assistance in the review of applications and related matters."

Reporting as chairman of the Medical Section, Dr. Irwin C. Winter said that the Section had sponsored a panel discussion on "Relationships of the Drug Industry with Governmental and Professional Regulatory Bodies" between representatives of the Food and Drug Administration, the National Research Council and the Public Health Institutes, and the Council on Pharmacy and Chemistry of the American Medical Association and the discipline of pharmacology as presented in our medical schools. This discussion was largely directed toward greater participation of industrial personnel in the deliberation of such agencies.

Dr. Winter also said that the Section as a whole had approved a resolution recommending an adjustment of the salary schedules of the Food and Drug Administration so that an adequate number of properly qualified physicians can be maintained on the Medical Staff of that agency.

The Subcommittee on Agranulocytosis found that two very suggestive leads toward the goal of obtaining a satisfactory animal test of the potentiality of a new agent for developing agranulocytosis did not live up to their early promise and have been abandoned, said Dr. Winter. However he said that at least four new avenues of approach have been uncovered and are being explored, and one of them is under active consideration, he said.

Concerning the Subcommittee on Contact Sensitization, Dr. Winter said:

"The 'gathering of experts' mentioned in last year's report has been accomplished and a very instructive discussion was had. Several suggestions for the development of methods which might allow an accurate prediction of the potentiality of new topical applications for causing contact sensitization were proposed. The subcommittee, after a great deal of effort, decided upon and recommended to the Section that two studies, one on animals and the other on a homogeneous human population to be run jointly, be supported. The Section has shown some reluctance to endorse these proposals, not necessarily because of doubt of the worth of the projects but apparently largely because of the expense involved, and also because the directing investigators requested a personal recompense for themselves. The Section is firmly on record as opposing this latter practice. The Section, because of these reasons and indecision as to the value of the two projects, refused by vote to recommend either. However, the subcommittee has been directed to further attack the problem. They also were asked to determine if other interested organizations might not assist in supporting this program financially."

Dr. Winter said that the Subcommittee on Ethical Publicity has drafted a set of principles expected to be useful in assisting the industry in meeting its obligations to the public and the medical profession in giving

them information on new medical discoveries, but at the same time, protecting them against misleading or irresponsible statements. Dr. L. D. van Antwerp, of the Subcommittee, addressed the National Association of Science Writers and made three points of particular interest: 1. That "patients are people" and should not be subjected to the terrible disappointment of raised but false hope; 2. The necessity of accurately checking the facts behind the release of information on new therapeutic agents; and 3. A plea that "science writing" be referred to the scientist source of the information for checking prior to publication.

Adam Hastings Fiske, vice-president in charge of development and control at Eli Lilly and Company, was elected president of the Association succeeding Donald S. Gilmore, chairman of the board of the Upjohn Company.

Vice-presidents elected are W. L. Dempsey, president of the Sharp & Dohme Division of Merck & Co.; Theodore G. Klumpp, president of Winthrop Stearn, Inc.; Harry J. Loynd, president of Parke, Davis & Company; and Ernest H. Volwiler, president of Abbott Laboratories. All except Mr. Loynd were reelected. Melvin C. Eaton, president of the Norwich Pharmacal Company, was reelected treasurer, and John K. Worley, of Detroit, was elected general counsel. Dr. Karl Bambach was reelected executive vice-president and secretary.

An active member of the ADMA since 1928, Mr. Fiske was serving his tenth year as a member of the ADMA executive committee at the time of his election as president. He has served two terms as vice-president.

ALDEHYDE DETERMINATION BY OXIMATION

(Continued on page 179)

Apparatus:

ph Meter and titration assembly (see Fig. 2) containing: (1) Air driven stirrer; (2) electrodes; (3) 150 ml. beaker with stopcock sealed to bottom; (4) hose to drain; (5) burette with curved tip.

Procedure:

I. Using a graduate, add 40 ml. of the hydroxylamine hydrochloride reagent to a 125 ml. glass stoppered Erlenmeyer flask.

II. Weigh the sample of aldehyde or ketone accurately into the flask containing the hydroxylamine hydrochloride reagent. The approximate sample size in grams is determined from the following formula:

$$\text{Sample} = \frac{0.75 \times \text{mol. weight}}{\text{Percent Aldehyde} \times \text{No. of Carbonyl Groups}}$$

III. Allow to stand at 20-25° C. until oximation is complete. Thirty minutes is usually sufficient; however, some aldehydes require from one to three hours, and this must be determined by trial.

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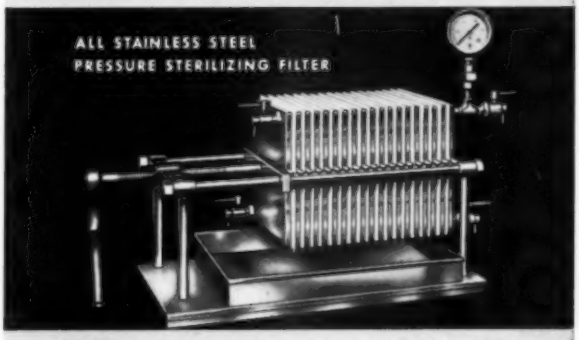

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IV. Titrate the sample in the 125 ml. Erlenmeyer flask with 0.5 normal NaOH almost to the end-point (green), then transfer the sample to the beaker with the electrode-stirrer assembly. Start the stirrer and complete the titration of the pH of the original reagent.

V. **Calculation**

$$\text{Percent Aldehyde} = \frac{\text{ml.} \times \frac{N}{2} \text{ NAOH} \times \text{Mol. Wt.}}{20 \times \text{sample wt.}}$$

Discussion:

This method is essentially the Dauphin[3] method and is Method I of the Essential Oil Association of America.[4] It can only be recommended for aldehydes and ketones which oximate at room temperature. Practically all aldehydes react in the cold and very rapidly. Heating has to be avoided to prevent the conversion of some tertiary butyl alcohol into tertiary butyl chloride which, if it should occur, would give low analytical results.

The potentiometric titration has been used in this laboratory for several years as it not only increases the accuracy of the titration but also is considerably faster than the colorimetric titration. The pH of the hydroxylamine hydrochloride reagent is determined only once for each batch as it is stable over a period of at least 10 days.

Summary

A simple and improved method is described which eliminates the two main problems of the determination of aldehydes by oximation. Acetal formation is eliminated by substituting tertiary butyl alcohol as solvent. The inaccurate colorimetric end-point is eliminated by use of the pH meter to establish the end-point.

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NEWER SKIN PROTECTIVES

(Continued from page 174)

As was indicated in previous reviews[19] in DRUG AND COSMETIC INDUSTRY and as pointed out in other discussions,[18-20] the wide range of possible irritants precludes the possibility of any so-called "universal" skin protective cream or ointment. In this connection Phillips[10] observes that because of the diversity of industrial processes and products it is not possible to make a barrier cream which can give complete protection, nor is it practicable to make individual creams for every specific irritant.

It is noteworthy that during the last few years there has been a definite tendency to reduce the number of creams being made available; the individual products being formulated to protect against a wider range of substances. Indeed, according to one view,[13] barrier creams fall roughly into two main categories; namely, the water-soluble and the water-repellent types. This view seems to be supported by the fact that some leading manufacturers now produce only two or three basic types of skin protective creams. Some, of course, still provide a wider and more specifically-active group of products.

For the purpose of this discussion, however, skin protectives will be considered under four groups, as follows: (a) Water-miscible types, (b) water-repellent types, (c) film-forming types, and (d) a miscellaneous class of products with specific and rather limited use. Of course, many preparations in these several groups have already been discussed in previous reviews.[13] Hence the present consideration will be limited to newer and presumably improved formulations.

The wate-miscible, oil-resistant barrier creams are intended primarily to protect the skin against dirt, dust and grime, viscous oils, greases, solvents, paints, lacquers and various other nonaqueous irritants. Based essentially on modified vanishing type bases, creams of this type are readily removed with soap and water.

The technical and manufacturers' literature offers a number of examples of products of this class. Many of these formulations take advantage of the properties provided by some of the newer industrial raw materials. For instance, the following two formulas[21] make use of a polyethylene glycol to improve the body, smoothness and other characteristics of the resulting protective hand creams:

Polyethylene glycol 1500	13.5	1.5
Stearic acid	11.5	1.5
Lanolin	4.0	1.5
Terpineol	0.1	0.1
Triethanolamine	1.0	—
Potassium hydroxide	0.5	0.2
Propylene glycol	10.0	7.4
Hydroxyethyl cellulose (Cellosize WP-10*)	0.6	0.4
Zinz stearate	5.0	1.6
Perfume	0.2	0.2
Water	53.6	80.1

(*Carbide & Carbon Chemicals Corp., New York, N. Y.)

Melt the stearic acid, polyethylene glycol and lanolin together. Add the terpineol and bring the temperature to 60° C. Add the triethanolamine and stir until a clear mixture is obtained. Heat all but 15 parts of the water to the same temperature, add the potassium hydroxide, and add this solution quickly, all at one time, using mechanical agitation. Stir in the propylene glycol. Add the hydroxyethyl cellulose to the 15 parts of water and stir for 30 minutes or until dissolved. Add this solution to the cream, continue stirring until the cream has cooled to about 45° C., add the zinc stearate slowly and continue stirring until the cream has cooled to room temperature.

Fatty acid esters of polyethylene glycols may also be used in the formulation of protective hand creams. They emulsify quickly and easily and produce creams that are readily removed with water. The use of such esters is illustrated in the following formula:[22]

Stearic acid	8.5 parts
Polyethylene glycol 600 monostearate	4.3 "
Lanolin, anhydrous	1.0 part
Potassium hydroxide	0.5 "
Propylene glycol	5.0 parts
Hydroxyethyl cellulose (Cellosize WSLM)	15.0 "
Terpineol	0.1 part
Perfume	0.4 "
Water	65.2 parts

Other surface-active are similarly used in barrier creams to promote washability. A preparation of this type, designed to protect against irritants such as cutting oils, industrial dirt and grime, and lacquer, and to facilitate their removal with soap and water, may be prepared from:[23]

Stearic acid	15.0 per cent
Sorbitan monostearate (Span 60*)	2.0 " "
Polyoxyethylene sorbitan monostearate (Tween 60*)	1.5 " "
Zinz stearate	5.0 " "
Sorbitol solution (Sorbo*)	6.0 " "
Methyl cellulose, four per cent solution, 4,000 cp.	25.0 " "
Water	56.6 " "
Perfume and preservative	sufficient

(*Atlas Powder Co., Wilmington, Del.)

Melt all the fats, including the zinc stearate, and bring to 90° C. Dissolve the sorbitol and preservative in the water and bring to 95° C. Add the water to the fats with rapid agitation. Let the temperature fall to 55° C., then work in the methyl cellulose mucilage under moderate agitation. Perfume at 40° C. and package warm.

Occasionally the patent literature offers data on barrier creams. Thus, according to an Italian patent,[24] a cream for protecting the hands from fats, oils, dyes and hydrocarbons may be made from:

Stearic acid	10.0 parts
Lanolin or beeswax	1.5 "
Glycerine	5.0 "
Casein	0.3 part
Ammonia	0.5 "
Water	35.0 "

In the second category are barrier creams designed to protect the skin from dilute acids and alkalies and other water-soluble irritants as well as those of an aqueous nature, such as emulsified oils and solvents. Products of this kind are based on fats and waxes or, more recently, on the silicones.

Conrad[25] offers the following formula as an example of a water-in-oil cream for use where it is desirable to

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protect against water-soluble substances:

Amerchol L-101*	15.0 per cent
Lanolin	10.0 " "
Mineral oil, 70 visc.	20.0 " "
Microcrystalline wax, 170 m.p.	15.0 " "
Water	40.0 " "

(*American Cholesterol Products, Inc., Milltown, N. J.)

Add the water to the oils with the temperature of both phases at 68° C. Mix rapidly until cool. Homogenize for best results. If desired, barrier substances may be incorporated to give more specific protective effects.

In the following protective cream,[23] which is basically of a greasy nature, the presence of a surface-active agent makes possible a neutral emollient product that can be removed readily by washing:

Polyoxyethylene sorbitan monostearate (Tween 61)	5.0 per cent
Lanolin	25.0 " "
Castor oil	25.0 " "
Ceresin wax	5.0 " "
Petrolatum	40.0 " "

Melt together the lanolin, monostearate, and castor oil. Then add the wax, followed by the petrolatum. Pour just before the product begins to set.

There is no doubt that the introduction of silicones into barrier cream formulations has greatly widened the range of protection of such products.[10-12] As has been pointed out in previous discussions[26,37] in this publication, the fact that the silicones possess chemical inertness, adhesiveness, and the ability to repel moisture made them of definite interest in the development of new and improved skin protective preparations for the industrial worker, the professional man and the housewife. Today, silicone-containing preparations are employed as protectives against dermatitis due to water, soap and other cleansers and against dermatoses due to cutting oils, coolants, alkalies, acids, paints and many other industrial irritants. In the medical field, these preparations are used to protect patients from the irritating effects of certain body fluids and discharges.

Improved silicone preparations are also being developed that will extend the usefulness of these materials. As recently reported by Currie,[28] a new type of silicone fluid has been developed that offers much promise. In addition to certain other desirable characteristics, fluids of this type have the important property of being soluble in 95 per cent ethyl alcohol. This solubility, which is said to be unique for silicone fluids, makes possible the preparation of alcoholic hand lotions which form a water repellent film on the skin. At least one company, according to Currie, is now marketing a lotion containing this type of fluid.

In the main, however, silicone-containing protectives are provided as creams or ointments. Among the different types of products that have been placed on the market and subjected to dermatologic investigation is a plasticized combination of silicone, nitrocellulose, and castor oil in a greaseless vanishing cream base,[29] a silicone-petrolatum blend,[30] and a cream prepared by mixing silicone fluid with bentonite.[31]

During the last year or so, quite a number of formulas for silicone-containing protective preparations have been made available from various sources. One of the simplest of such preparations, but one that is rated high for its efficacy is described by Phillips[32] as consisting of:

Silicone fluid (DC 200; 60,000 cts.*)	30.0 parts
White ointment, U.S.P.	70.0 "

(*Dow Corning Corp., Midland, Mich.)

Soften the white ointment by warming and gradually incorporate the silicone. Stir until cool.

A quite simple, silicone-containing protective cream of the vanishing type, effective against a wide variety of soiling and staining materials, may be made from:[33]

Silicone fluid (DC 200; 1,000 cts.)	25.00 parts
Glyceryl monostearate (Aldo 33*)	7.00 "
Methylparaben	0.25 part
Water	67.75 parts

(*Glyco Products Co., New York, N. Y.)

Heat the water and the glyceryl monostearate together at 80° C., then add the silicone and the presrvative. Stirring should be continuous until cool.

Undoubtedly the following protective cream formula, as suggested by Conrad,[21] provides a more emollient effect:

Amerchol L-101	3.0 per cent
Silicone fluid DC 200; 1,000 cts.)	10.0 " "
Glyceryl monostearate, self-emuls.	10.0 " "
Water	77.0 " "
Preservative	sufficient

Add the water to the melted oils with the temperature of both phases at 75° C. Mix rapidly until cool.

In their report on the silicones, Tajkowski and Reilly[27] offer a formula for a vanishing cream containing 10 per cent of a silicone fluid to promote water-repellency and provide protection against aqueous irritants. This stable cream, which develops pearl during storage, is made from:

Stearic acid (Hystrene T-70*)	15.0 per cent
Isopropyl palmitate	2.0 " "
Silicone fluid (SF-96; 1,000 cts.**)	10.0 " "
Potassium hydroxide	1.0 " "
Sorbitol solution (Sorbo*)	18.3 " "
Water	53.7 " "
Preservative and perfume	sufficient

(*Atlas Powder Co., Wilmington, Del.)

(**General Electric Co., Waterford, N. Y.)

Mix the first three ingredients and heat to 80° C. Mix the potassium hydroxide, sorbitol, water and preservative and bring to 82° C., then add to the first mixture slowly with continuous agitation. Continue agitation to 45° to 50° C. Perfume and pack.

Among the several silicone-utilizing formulas developed by dermatologist Goodman[34] is the following [illegible] liquid preparation:

Silicone, alcohol-miscible	5-10 parts
Citric acid	1 part
Isopropanol, 99 per cent, to make	100 parts

The third general group of barrier products consists of materials capable of forming protective films on the skin. These preparations, sometimes referred to as "invisible gloves," are based on the use of solvent-resistant film-forming materials. Thus, in a study of barrier creams to protect workers against common industrial solvents, one European investigator[35] found that the following preparations were most effective:

I

Gelatin	4.0 parts
Glycerine	30.0 "
Water, to make	100.0 "

II

Sodium polyacrylate	10.0 parts
Glycerine	30.0 "
Water, to make	100.0 "

III

Cellulose ether (Polyfibron)	4.0 parts
Glycerine	30.0 "
Water, to make	100.0 "

The last or miscellaneous group comprises more or less specialized products designed to protect against specific types of chemical or physical irritants. In many cases, these consist essentially of a preparation of the first or second class containing ingredients with rather specific action. For example, flash burn creams fall into this category. Modern products of this type, which have utility in steel mills, on shipboard and elsewhere where there is exposure to intense heat for short periods, are far less complex in composition than those offered a few years ago. Illustrative of a modern flash burn protective cream[23] is one consisting of:

Titanium dioxide	10.0 per cent
Petrolatum	30.0 " "
Sorbitan sesquioleate (Arlacel C*)	10.0 " "
Magnesium stearate	10.0 " "
Water	8.0 " "
Iron oxide	2.0 " "

(*Atlas Powder Co., Wilmington, Del.)

Melt the fats and add the pigments, heating to 65° C. Bring the water to the same temperature and add to the previous mixture with agitation. Pass through a colloid mill or homogenizer.

The problem of radiation hazards has long been of great importance in both industry and the medical professions.[15,36] As is all too evident, this problem has become increasingly acute with the advent of the atomic bomb. In one approach to the solution De Ment[37] has developed special protective compositions which, when applied to the body surfaces, will serve to lessen the injurious flash effects of an atomic explosion. Such preparations, provided as powders, liquids, or ointments or creams, contain substances, like aluminum powder,

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mica and magnesium oxide, that act to reflect thermal energy. An aqueous lotion of this class is given as follows:

Aluminum	10.0 parts
Magnesium oxide	5.0 "
Methyl salicylate	8.0 "
Glycerine	7.0 "
Water	70.0 "

Where a cream or ointment is desired, De Ment suggests the following:

Aluminum	1.0 parts
Lanolin	2.0 "
Petrolatum	8.0 "
Glycerine	1.0 "

It appears that the development of protective or barrier creams, ointments and lotions to prevent occupational dermatoses is in a state of flux. Not only are such products being improved with the inclusion of new raw materials, but new types of products are being dormulated to offset new hazards.

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ODOR AND OLFACTION— BIOCHEMICAL APPROACHES

(Continued from page 184)

materials, inhaled as aerosols, produced odor stimuli described as yeasty or alcoholic. Particles of silica gel did not produce such a stimulus, but similar silica gel coated with silver did. Incomplete studies of particle size indicated that the range might be around 5 microns. Volatilization may therefore be only the most common means of getting odorants to the olfactory organ, not the only effective means.

Enzymes in Olfaction

El-Baradi and Bourne[48] reported finding alkaline phosphataste in the taste buds and in the olfactory mucosa. They also found an esterase in the taste buds. Vanillin inhibited the phosphatase in the nasal mucosa. Kistiakowsky[49] joined those relating enzymes to olfaction, postulating that as many different enzyme systems are involved as there are basic smells. Further data on effects of odorants upon single enzymes will make possible much more specific knowledge of olfactory mechanisms.

Groups Involved in Olfaction

Early odor theory was much concerned with the idea of "osmophores," chemical groupings thought to be essential for production of odor. Lists of functional groupings can be made which are frequently found in odorants, but the idea has not been fruitful in correlating odor with structure. If odorants react with enzymes, the key to odor production will be found in correlation of an odorant's configuration with its effect upon enzymes.

Binding Forces

Pulk and Tolmach[50] discovered that one type of virus, T-2 bacteriophage, required carboxyl groups for attaching itself to bacterial cells. Another type, T-1 bacteriophage, required both carboxy and amino groups for such attachment. Very few odorant molecules contain groups so obviously useful as carboxy and amino for binding them to protein molecules. However, Karush[51] reported that hexanol competed with anions for binding to proteins, and Klotz and Ayres[52] found that other neutral molecules (e.g., aminoazobenzene) can be bound to proteins. Lysine and tyrosine units in the protein appeared to be involved in the binding forces. Danielli[34] gives the following expression for the concentration of a drug at the cell surface:

$$\frac{C_s}{C_b} = e^{\frac{E}{RT}}$$

where C_s = concentration at adsorbing surface
C_b = bulk concentration (outside cell)
E = energy of adsorption
R = gas constant
T = absolute temperature.

The energy of adsorption is made up of three components, associated with the ionic, polar, and non-polar groups respectively. For adrenaline, the minimum values are ionic 700, polar 3000, non-polar 3500, total E = 7200, giving $C_s/C_b = 2 \times 10^5$, so that there is a 200,000-fold concentration of adrenaline at the cell surface. Almost one-half the energy in this case is non-polar.

Odorant molecules may thus be bound to the enzymes at the olfactory cell surfaces largely by non-polar forces. Structural features not considered important for gross chemical actions, and not evident in the traditional two-dimensional formula, come into play.

Steric Strain

It is well known that a variety of compounds with rings containing 13 to 18 members exhibit odors of the cedar, musk, or civet type, and that the odors appear to be more dependent upon ring size than upon the particular functional group present. This fact can be related to Brown's work on I-strain, already cited.[23] Brown and Borkowski[53] further reporter that steric strains are such that rate of reaction (solvolysis) at a ring atom reached a maximum in the 8-membered ring, then fell with increasing ring size to become approximately constant for rings with 13 or more members. Searles[54,55] and his coworkers reported that ring size has a marked effect on the donor ability of cyclic ethers in H-bonding. In cyclic esters and lactones a similar variation was found, and the carbonyl oxygen appeared to be the best bonding site.

Whittaker[56] concluded that many compounds containing the carbonyl group act as weak cholinesterase inhibitors. McLennan and Elliott[57] found that thujone and camphor accelerated synthesis of acetyl-choline by brain slices when they were in very low concentration, but in higher concentrations inhibited the synthesis. Many odorants contain a carbonyl group, indicating a mechanism whereby they excite the nerve cells in low concentration, but fatigue them in higher concentrations.

Other groups, less active chemically, may take part in olfactory mechanisms. Hydrogen atoms bound to carbon are generally considered to be firmly fixed, but even such atoms can show surprising mobility under some conditions. Turkevich[58] treated ethylene with deuterium, catalyzing the reaction with hot nickel wire. A mixture of hydrocarbons was obtained, containing various deuterioethanes, and also some completely light ethane, showing extensive interchange of free and combined hydrogen.

Methyl Groups

Methyl groups have considerable significance in numerous biochemical processes, among them the acetylcholine-cholinesterase system. Pullman,[59] in studying free radicals, found that the free balence was most concentrated at the methyl groups. Welsh and Taub[60] found that quaternary ammonium ions had to carry at least two methyls in order to exert acetylcholine-like effect on the clam heart. Brown[61] designated as "homomorphs" compounds or groupings having similar configurations, and therefore subjected to similar strains. The tertiary butyl group is a homomorph of $-N(CH_3)_3+$ suggesting connections between highly methylated odorants and the cholinesterase system. It is well known that many compounds with tertiary carbons near a functional group have a camphoraceous odor. Tertiary butyl alcohol has such an odor, quite distinct from those of its isomers.

Apotheker and Rubin[62] found that introduction of a methyl group at the 4-position of terpin markedly decreased the odor. This result is reminiscent of the strategic importance of angular methyl groups in several carcinogenic hydrocarbons.

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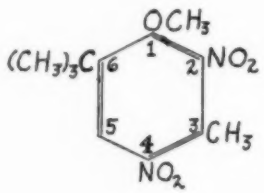
Nitro Musks

Detailed study of the nitro musks should furnish valuable clues to structure-odor relationships. Carpenter, Easter and Wood[63] prepared a large number of isomers, homologs, and analogs of musk ambrette (1-methoxy-2, 4-dinitro-3-methyl-6-tert-butylbenzene).



MUSK AMBRETTE

Modification of the musk ambrette structure produced the following results:

1. Reversal of the methyl and tert-butyl groups produced an odorless compound.

2. Increase of size of alkoxy group at position 1 reduced odor strength: the ethoxy compound had a milder musk odor than musk ambrette; the isopropoxy compound was much weaker, the butoxy compound had no musk odor.

3. Increase of size (or branching) of the alkyl group at position 3 first increases, then reduces the odor strength: the ethyl compound is stronger than musk ambrette; the isopropyl compound is weaker; the tert-butyl compound is odorless.

4. Increase to more than two carbon atoms of size of alkyl groups on the tertiary carbon at position 6, destroys the odor: the —C (Me)$_2$ Et compound has an odor like musk ambrette; the —C (Me)$_2$ Pr, the —C (Me)$_2$ Bu, and the —C (ME)$_2$ Am compounds are odorless.

5. Removal of the methyl group at position 3 does not destroy the musk odor. Replacement, in this demethylated compound, of the 4-nitro group by —CHO leaves the odor musklike; but replacement of the 4-nitro by tert-butyl produces a faint musk odor, and its replacement by the acetyl group produces an odorless compound.

6. Replacement of the 3-methyl group by a methoxy group produces a strong musk odor.

Examination of the Fisher - Hirschfelder - Taylor models of the nitro musks indicates that in many of these compounds the degree of hindrance noted by Gero[26] is found; that is, certain parts of the molecule cannot rotate without simultaneous rotation of other parts.

The compound 2,4- di (tert-butyl)- 5-methoxybenzaldehyde is of interest as the first "nitro musk" without a nitro group. This compound and two related mono-nitro compounds have been patented by Carpenter and Easter as perfume materials, ending the tradition that at least two nitro groups are necessary in order to produce a musk odor in benzene derivatives.

Bedoukian[65] describes odor-structure relations in nitro musks and macrocyclic musks, and cites the work of Ruzicka and Prelog[66], who synthesized androstene-16-ol-3, a sterol derivative which has a musk odor; the macrocyclic ketone, civettone, can be formulated in a configuration similar to that of androstene-16-ol-3. The musk odorants of the nitro, macrocyclic, and sterol groups must possess common structural features which operate to produce similar olfactory impulses; recognition of these common features would notably advance understanding of olfactory mechanisms.

Hormones and Olfaction

Indirect support for the view that enzymes participate in olfaction comes from Guillot and Fiehrer[67], who reported that the odor perceived upon inhalation of 15-hydroxypentadecanoic lactone (Exaltolide) varied according to concentration of sex hormones in the blood. To normal women, this compound had a strong, disagreeable odor between mentrual periods, but a weak pleasant odor during menstruation. For normal men, or for ovariectomized or pregnant women, it had little or no odor. Several women who were perceiving a strong, disagreeable odor in exaltolide were given 25 mg. testosterone propionate by injection; within 30 minutes the odor became weak and pleasant. To some men with testicular or hepatic insufficiency, or arteriosclerosis, it had a moderately strong odor. Sex hormones obnoxiously exert potent effects on many enzyme systems,[68] and it is easy to visualize interlocking effects of structurally similar hormones and odorants upon enzymes of the olfactory cells. One such effect is reported by Milani,[69] who found that administration of follicormone or diethylstilbestrol lowered serum cholinesterase activity in female rabbits.

Mercaptans

The sulfhydryl group imparts a characteristic odor to organic compounds which is very powerful and relatively invariant. Sulfhydryl compounds enter into many biochemical processes essential to body function;[71] this diversity of activity makes it difficult to specify the mechanism by which mercaptans exert their olfactory effect, but in these compounds at least there should be general agreement upon the ability of the odorant to enter into chemical reaction with cell constituents. We have already seen the importance of the sylfhydryl group in vision.

SUMMARY

Recent advances in biochemistry have been cited to support the thesis that odorants affect olfactory cells by adsorption upon enzymes at the cell surface, producing nerve impulses as a result of the chemical reactions catalyzed by these enzymes. Odor theory can be amplified, as a result of these advances, to include more detailed visualization of the molecular features significant for odor production. Such features include:

1. Groups active per se with cell constituents (e.g. sulfhydryl).

2. Groups which can donate or accept electrons at points matching the hydrogen-bridged chains of proteins (e.g., a C-O group and a double bond in conjugated position).
3. Homomorphs of groups effective in the acetylcholine cycle (e.g., tertiary butyl groups).
4. Linkages under unusual strain (e.g., large rings).
5. Configurations with steric hindrance of such a nature that neighboring groups can rotate only in unison.

Successful use of the biochemical approach in attacking the problem of vision encourages its use in olfactory problems. Biochemical research on the olfactory processes is urgently needed to tie together the many leads opened by advances in analogous fields.

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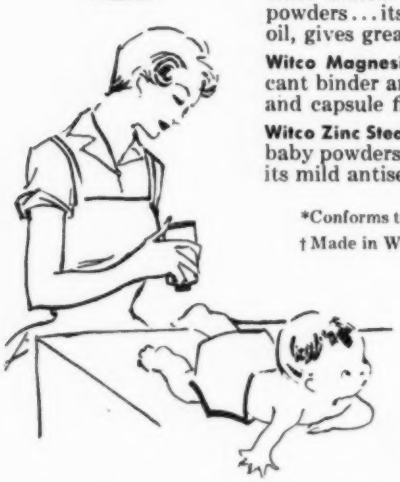

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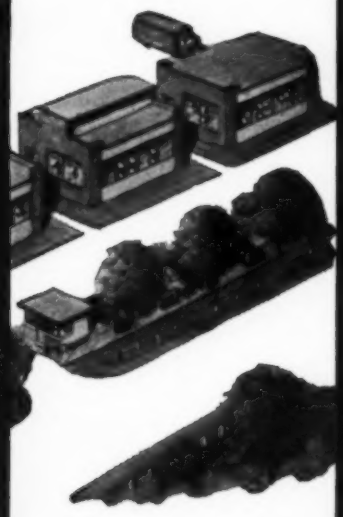

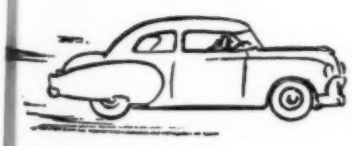

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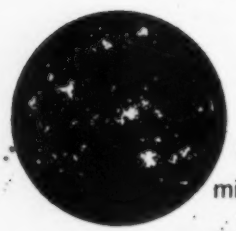
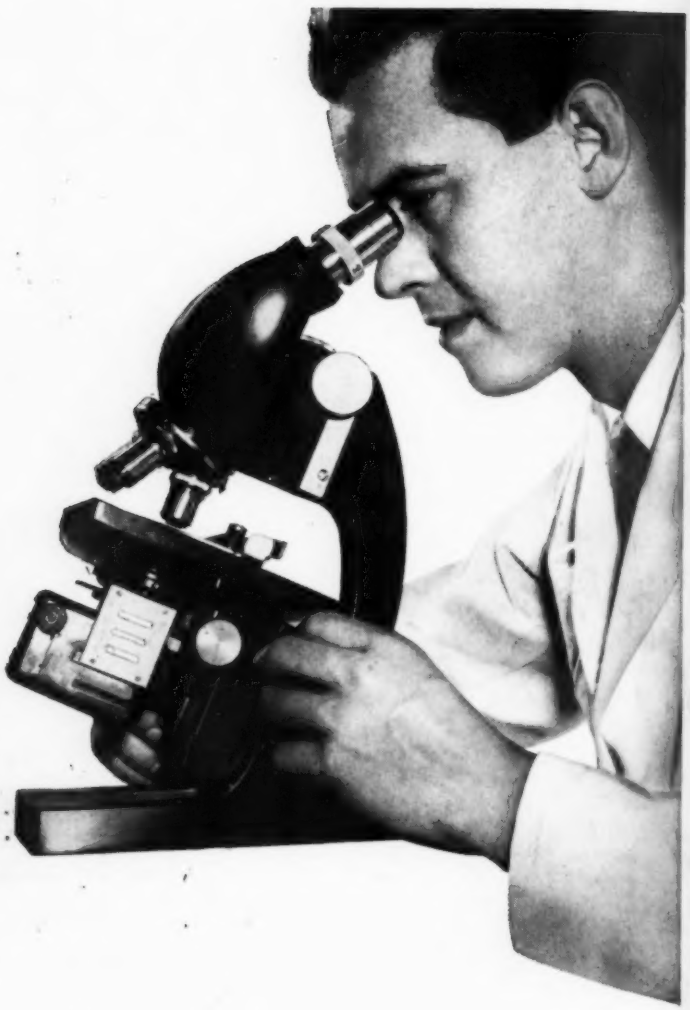


from tiny micro-powder

to coarse granular...



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